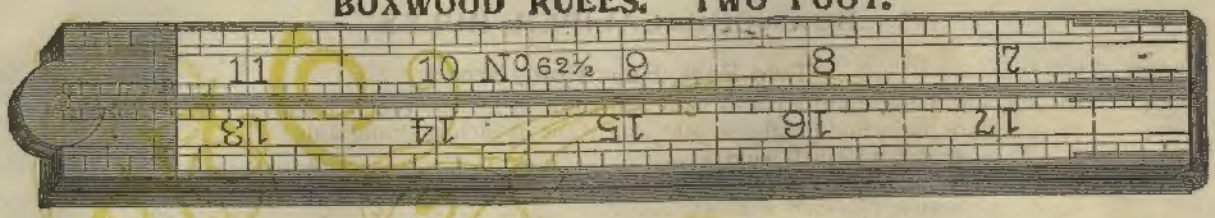
GIRLS WILL BE GIRLS

BOXWOOD RULES. TWO FOOT.



Stephens' Nos.	Stanley's Nos.		Per doz.	Each.
41	68	Round joint, middle plates, 8ths and 16ths of inches, 1 inch wide	$4.00	$0.15
42	61	Square joint, middle plates, 8ths and 16ths of inches, 1 inch wide	5.00	.20
45	63	Square joint, edge plates, 8ths, 10ths, 12ths, and 16ths of inches, draughting scales, 1 inch wide	7.00	.25
42¼	84	Square joint, half bound, 8ths, 10ths, 12ths and 16ths of inches, draughting scales, 1 inch wide	12.00	.45
42½	62	Square joint, full bound, 8ths, 10ths, 12ths and 16ths of inches, draughting scales, 1 inch wide	15.00	.55
46	51	Arch joint, middle plates, 8ths, 10ths, 12ths, and 16ths of inches, draughting scales, 1 inch wide	6.00	.25
48	53	Arch joint, edge plates, 8ths, 10ths, 12ths and 16ths of inches, draughting scales, 1 inch wide	8.00	.30
49¼	52	Arch joint, half bound, 8ths, 10ths, 12ths and 16ths of inches, draughting scales, 1 inch wide	13.00	.50
49	54	Arch joint, full bound, 8ths, 10ths, 12ths and 16ths of inches, draughting scales, 1 inch wide	16.00	.60
50	59	Double arch joint, bitted, 8ths, 10ths, 12ths and 16ths of inches, draughting scales, 1 inch wide	9.00	.35
52	60	Double arch joint, full bound, 8ths, 10ths, 12ths and 16ths of inches, draughting scales, 1 inch wide	21.00	.80

Boxwood, Two Feet, Four Fold, Extra Narrow.

44	61½	Square joint, middle plates, 8ths and 16ths of inches, ¾ inch wide	$5.50	$0.20
44½	63½	" " edge plates, 8ths, 10ths and 16ths " ¾ "	8.00	.30

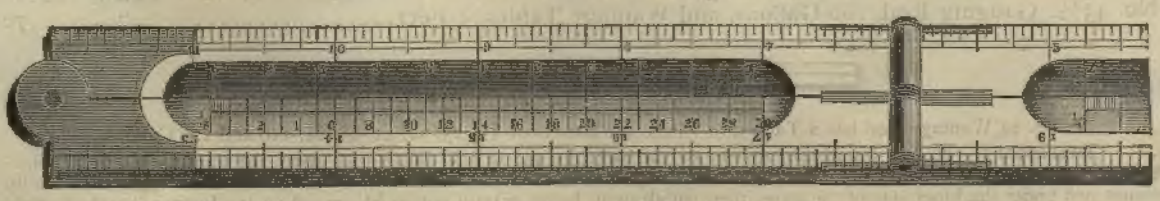
Ivory, Two Feet, Six Fold, Extra Narrow.

No. 60. Arch Joint, Edge Plates, German Silver, 8ths, 10ths, 12ths and 16ths of inches (100 of a foot on edges of unbound), ¾ inch wide, each.....Unbound, $6.75; Bound, $8.00

Ivory, Two Feet, Four Fold.

Stephens' Nos.	Stanley's Nos.		Per doz.	Each.
77	85	Square joint, German silver, edge plates, 8ths, 10ths, 12ths, and 16ths of inches, ⅞ inch wide	54.00	2.70
83	86	Arch joint, German silver, edge plates, 8ths, 10ths, 12ths and 16ths of inches, 100ths of a foot, draughting scales, 1 inch wide	64.00	3.20
84	87	Arch joint, German silver, bound, 8ths, 10ths, 12ths, and 16ths of in., draughting scales, 1 inch wide	80.00	4.00
86	89	Double arch joint, German silver, bound, 8ths, 10ths, 12ths, and 16ths of inches, draughting scales, 1 inch wide	92.00	4.50
87	95	Arch joint, German silver, bound, 8ths, 10ths, 12ths, and 16ths of inches, draughting scales, 1⅜ inches wide	102.00	5.00
88	97	Double arch joint, German silver, bound, 8ths, 10ths, 12ths, and 16ths of inches, draughting scales, 1⅜ inches wide	116.00	5.80

ARCHITECTS' RULES, WITH BEVELED EDGES.



ARCHITECTS' RULES.

Stanley's Nos.		Per doz.
53½	Boxwood, Arch joint, edge plates, 8ths, 10ths, 12ths, and 16ths of inches, with inside beveled edges and architects' draughting scales, 1 inch wide	$20.00
86½	Ivory architects' rule, same as above, mounted with German silver	96.00

BOXWOOD CALIPER RULES.

Two Feet, Four Fold, Broad.

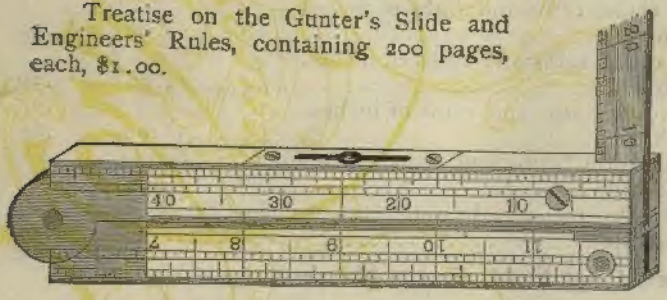
Stephens' Nos.	Stanley's Nos.		Per doz.	Each
53	67	Round joint, middle plates, 8ths and 16ths of inches, 1⅜ inch wide	$5.00	$0.20
54	70	Square joint, middle plates, 8ths and 16ths of inches, draughting scales, 1⅜ inch wide	7.00	.25
56	72	Square joint, edge plates, 8ths, 10ths and 16th of inches, draughting scales, 1⅜ inch wide	9.00	.35
54½	72½	Square joint, full bound, 8ths, 10ths and 16ths of inches, draughting scales, 1⅜ inch wide	18.00	.70

Two Feet, Two Fold, with Slide.

Stephens' Nos.	Stanley's Nos.		Per doz
9	26	Square joint, slide, 8ths, 10ths and 16ths of inches, octagonal scales	$9.00
14	12	Arch joint, bitted, Gunter's slide, 8ths, 10ths and 16ths of inches, 100ths of a foot, draughting and octagonal scales	14.00
27	15	Arch joint, bound, Gunter's slide, 8ths, 10ths and 16ths of inches, 100th of a foot, draughting and octagonal scales	24.00

The above slide rules are all 1½ inch wide.

Treatise on the Gunter's Slide and Engineers' Rules, containing 200 pages, each, $1.00.

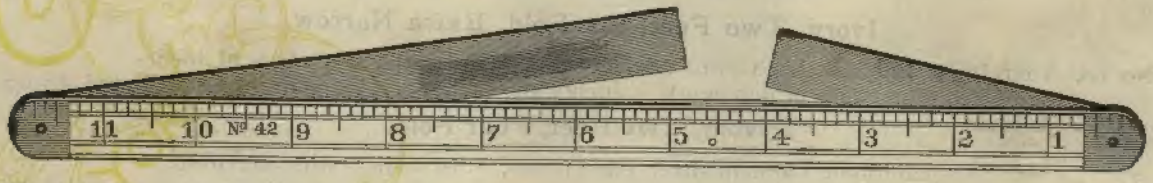


STEPHENS' PATENT COMBINATION RULES.

This Rule combines, a level, bevel, square, plumb, protractor, inclinometer, etc. Edges bound with brass.

Each.....$3.35

SHIP CARPENTERS' BEVELS.



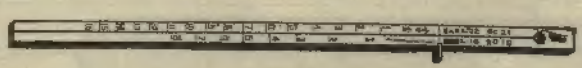
No. 42. Boxwood, Double Tongue, 8ths and 16ths of inches.....each, $0.50
No. 43. Boxwood, Single Tongue, 8ths and 16ths of inches..... " .50

GAUGING AND WANTAGE RODS.

No. 45 Gauging Rod is graduated in Wine Measure up to 120 gallons on one side, and in inches and parts of inches on the other side.

DIRECTIONS.—To ascertain the capacity of a barrel, insert the rod in the bung-hole in a slanting direction to the chime, note point on the rod which comes exactly in the middle of the bung hole, on a line with the under side of the stave; then reverse the process, running the point of the rod to the chime at the other end of the barrel; and if the bung-hole is exactly in the middle of the barrel, the result will be the same as before, and the capacity of the barrel will be shown. If the measurements differ, add them together and divide by two, and you have the number of gallons the barrel will hold.

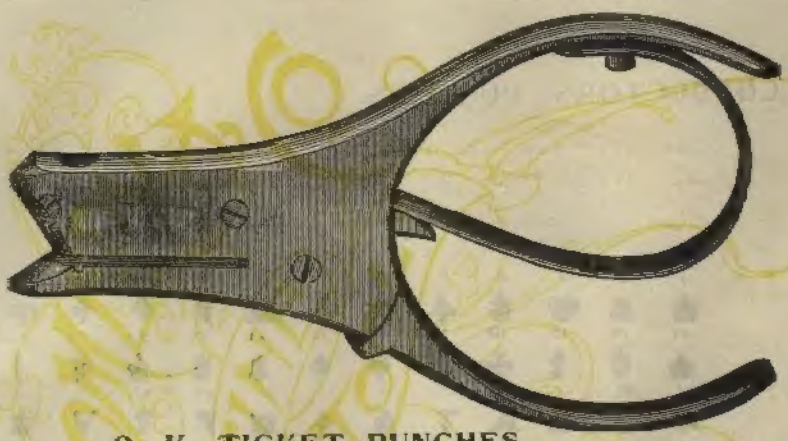
No. 45. Gauging Rod, 120 Gallons, 3 Feet.....each, $0.60
No. 45½. Gauging Rod, 180 Gallons, and Wantage Tables, 4 Feet..... " .70



No. 44 Wantage Rod has 8 Tables, or Lines, for Barrels of 16, 23, 32, 42, 48, 84, 110 and 120 Gallons.

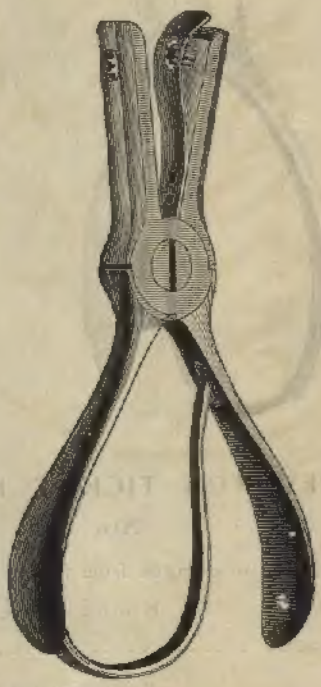
DIRECTIONS.—Having found the capacity of the barrel by use of the gauge rod, insert the wantage rod perpendicularly in the bung-hole, holding it so that the brass lip points toward the head of the barrel; lower it slowly until the lip comes just under the inner side of the stave, then withdraw it, being careful not to let the rod go any further into the barrel; and the mark where the rod is wet, on the line which has the full capacity of the barrel at the top, shows the number of gallons that are wanting to fill it.

No. 44. Wantage Rod, 8 Lines .....each, $0.50
No. 37. Wantage Rod, 12 Lines..... " .60



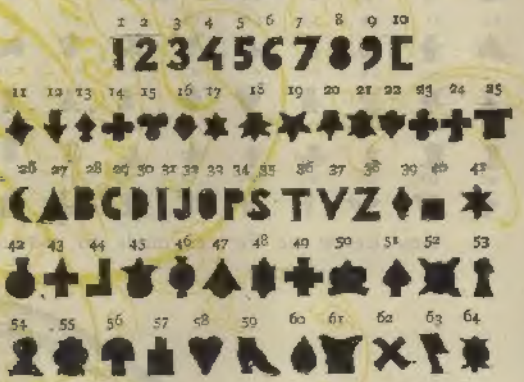
IMPROVED CONDUCTOR'S CANCELING PUNCH.

No. 1. Jaw 1 inch,
Price each ...$2.00
No. 10. Jaw 3 inches,
Price each.....$2.50

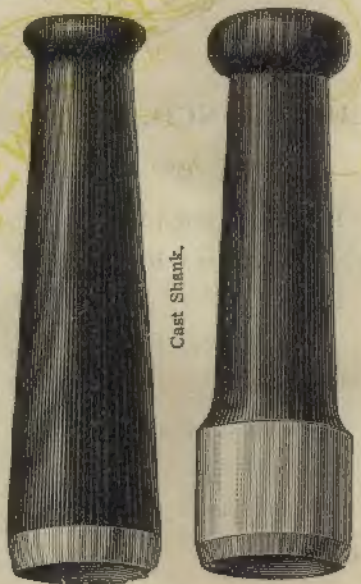


O. K. TICKET PUNCHES.

Nickel Plated.



Length of jaws.....1¼ inches.
Round holes.....Each, $1.92
Fancy holes.....“ 2.00
With 1½ inch jaw extra.....“ .35



FULTON HOLLOW TINNERS' PUNCHES.

For punching thin metal.

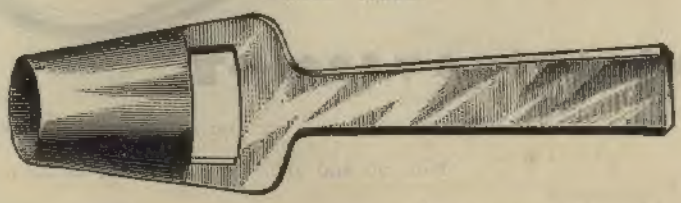
All sizes to 3 inches in stock.

Sizes	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	1¾ in.	2 in.	2½ in.	3 in.
Cast Shank	$.50	.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00
Wrought Shank	.50	.75	1.00	1.25	1.50	1.75	2.50	3.13	3.75

ROUND PUNCHES.

All Double Handles.

Fulton Brand.



7/16 in....Each, $ .80	1 3/8 in....Each, $1.05	1 5/8 in....Each, $2.75	2¼ in....Each, $4.75
½ “ .... “ .85	⅞ “ .... “ 1.09	1¾ “ .... “ 3.50	2⅜ “ .... “ 5.25
9/16 “ .... “ .88	1 7/16 “ .... “ 1.15	1⅞ “ ... “ 3.75	2½ “ .... “ 6.00
5/8 “ .... “ .92	1 “ .... “ 1.20	2 “ .... “ 4.00	2¾ “ .... “ 7.50
11/16 “ .... “ .95	1⅛ to 1¼ “ 2.08	2⅛ “ .... “ 4.25	3 “ ... “ 9.00
¾ “ .... “ 1.05	1⅜ to 1½ “ 2.67		

CONDUCTORS' PUNCHES.

No. 411. Jaw 1 inch deep..... Each, $2.00
No. 411 A. " 2 " " ..... " 2.50

Special prices quoted on large lots.

List of Designs.

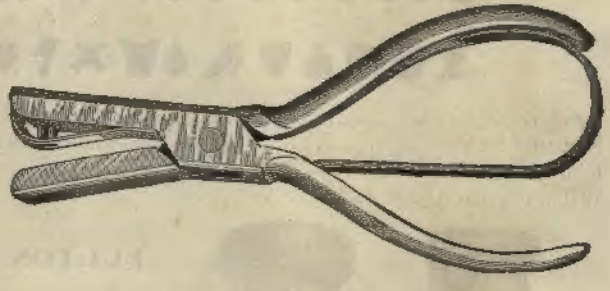
Any Letter or Pattern made to order.

FULTON TICKET PUNCHES, No. 36.

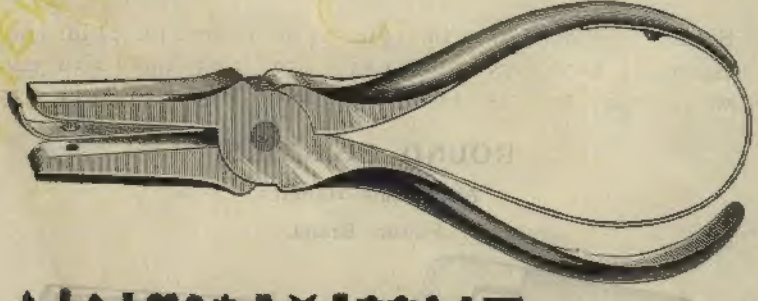
Made in designs from 1 to 48 as above only.

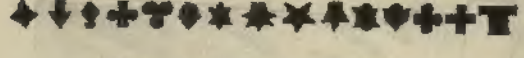
Round holes,
Each.....$ .60

Fancy holes,
Each.....$ .75



NEWARK TICKET (OR WHIST CLUB) PUNCH.





Nos. 2,500 and 2,550.

Length of jaw to cutter..1 inch

No. 2,550, Round holes,
Each.....$ .92

No. 2,500, Fancy holes,
Each.....$1.00

Nickel plating extra,
Each.....$ .15

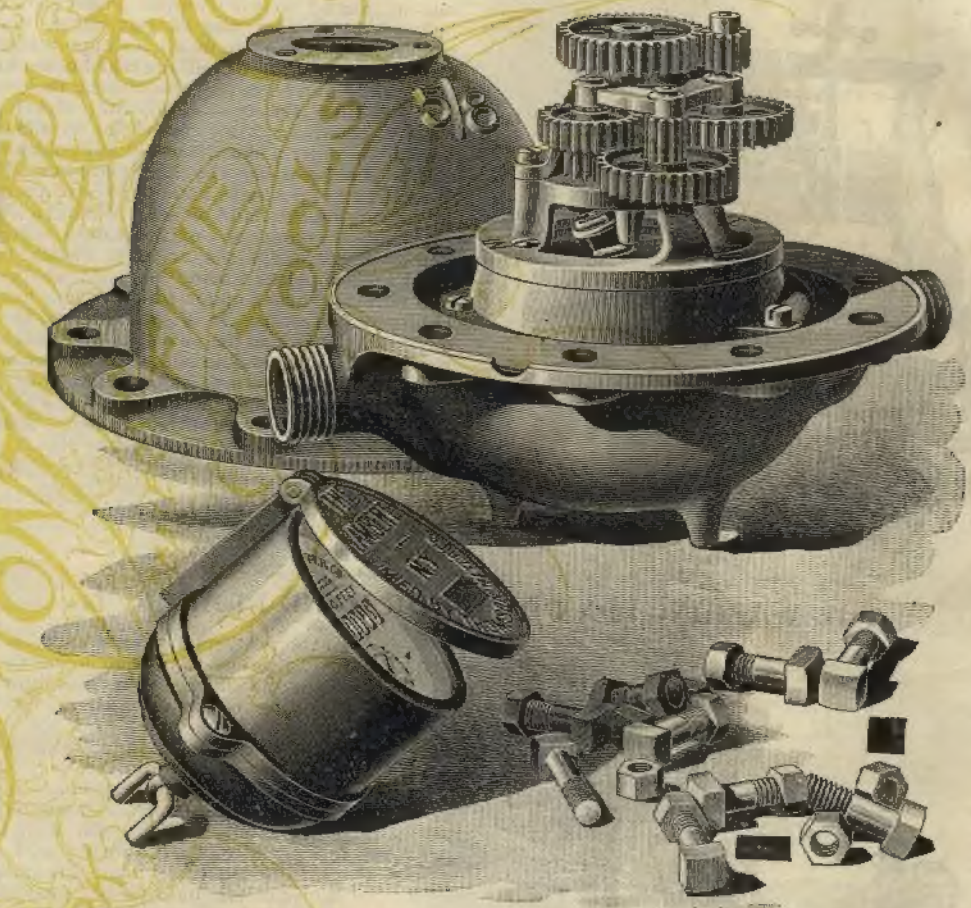
Punches Nos. 26 and 2,500 can only be supplied in the 15 designs shown above.

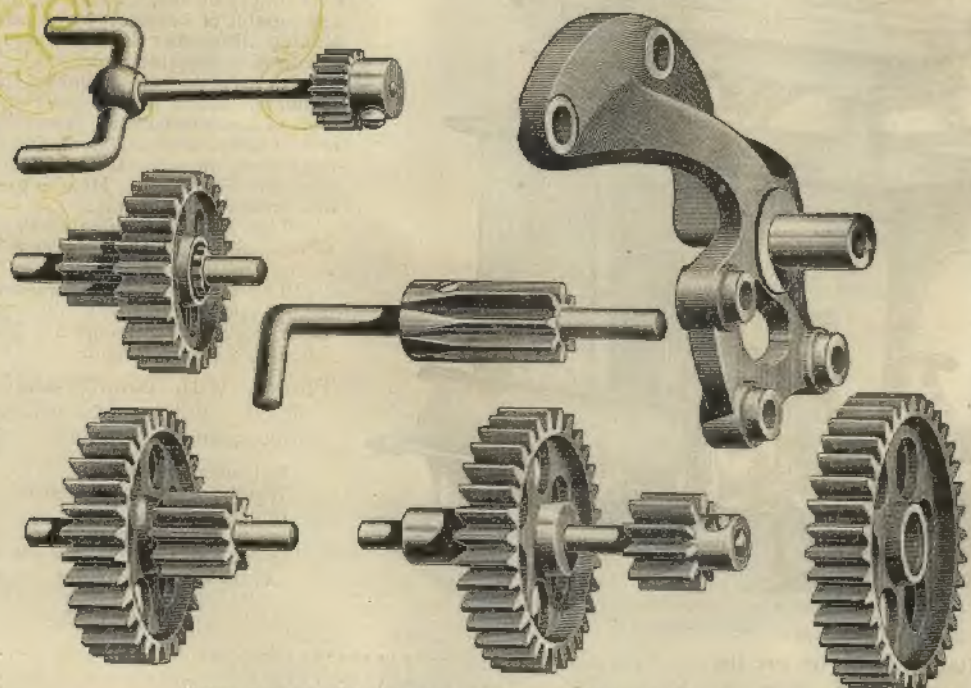
Nos. 26 and 260. Same pattern as Nos. 2,500 and 2,550.

Length of jaw to cutter, 1¼ inch.

No. 260, Round holes.....Each $1.42
No. 26. Fancy " ..... " 1.50
Nickel plating, extra..... " .15

THOMSON WATER METERS.





"THE LAMBERT" INTERNAL GEAR-TRAIN PARTS—FULL SIZE.

"The Lambert," illustrations of which are here shown, is by no means new. In it, however, are embodied all improvements which the test of time and long service have proved to be requisite in a perfect water meter.

The successful application of the disc principle originated with us, and has been severely tested all over the world during the past nine (9) years, in which time we have made and sold nearly 90,000 meters.

The special object in view in every improvement we have added to our meter, from time to time, has been to extend its life and avoid repair, taking into consideration, also, lasting accuracy, so important in a water measuring instrument.

In "The Lambert" our aim has been to produce the best, regardless of cost. And should the price be increased to three times what we ask for this meter in its several sizes, it would not be possible, just now, either in material design or detail of manufacture, to improve on it.

In "The Lambert" the castings have been somewhat improved in form and greatly increased in weight, yet we continue making them of the best bronze composition.

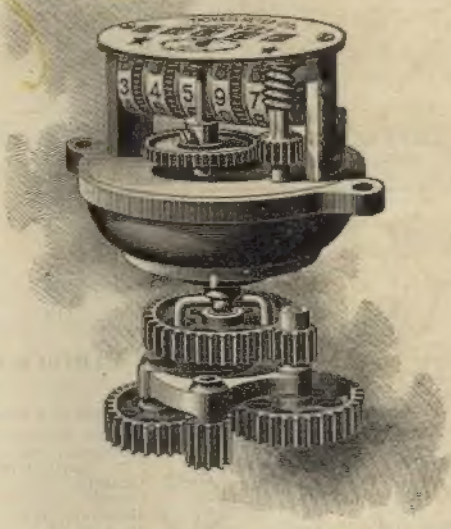
The internal gearing used has been radically remodeled and made entirely of new patterns. It is, we consider, by far the best wearing, most sensitive and strongest internal gear train ever put in a water meter. It consists of four gears and four pinions. The gears are made with very heavy teeth cut by special machinery, all wheels being $\frac{5}{8}$ of an inch thick at the toothed portion or periphery, and are cast of semi-hard, bronze composition (tin and copper). The four pinions, which are of large diameter, are made of the very hardest grade of phosphor-bronze. The central axis or pivots of the gears are made of very hard 18% German silver, journaled freely at both ends in hard bronze composition bearings, $\frac{5}{8}$ of an inch deep.

The connection with the least speeded gear and the stuffing-box shaft is made by an intermediate strong, double-armed crank, rigidly fastened on the shaft and engaging loosely into the arms of the last gear, which is freely mounted on a large central bronze hub cast solid with the bridge plate. The connection between these two parts, while positive, is not restrained in its alignment; hence, any variation due to the bolting of the upper casing or the register cup will have no effect whatever on the sensitiveness of the gearing.

For all sizes of "The Lambert" from $\frac{5}{8}$ of an inch to 6 inches, inclusive, the internal gears, pinions and bridge are the same and interchangeable.

Two sizes of register cups and stuffing-box shafts are made. The smaller size to fit all meters from $\frac{5}{8}$ of an inch to $1\frac{1}{2}$ inches, inclusive, the larger size to fit all meters from 2 inches to 6 inches, inclusive.

THE "STAR" REGISTER.



The "Star" Register, which we make and offer on the market, is a perfect straight-reading counter; one that will give entire and lasting satisfaction.

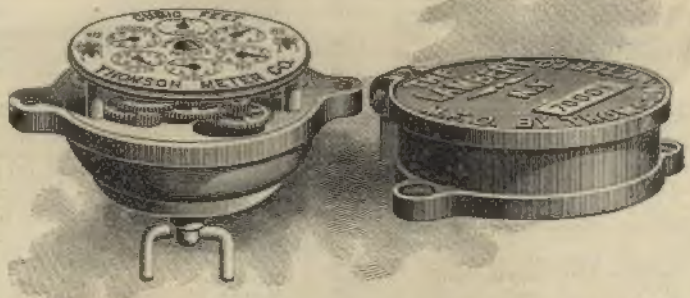
The numbered wheels are made of porcelain, with figures enameled thereon at high heat.

The driving wheels on each side of the numbered wheels are of solid brass, accurately machined, and rigidly mounted with the porcelain wheels by a special process. The black enameled figures baked on white enameled porcelain ensure plain reading, and, in connection with the brass gears, a good wear of the parts.

There is no cheap molded material about this register; nothing that can swell or twist or warp with moisture or heat; no painted figures to rub off and disappear and thus render it useless.

Like the ordinary register, the "Star" is mounted in the top cup of the meter. It can be turned around at the time the meter is set, so as to have the reading always facing the inspector.

The top dial is of copper, enameled, and has a graduated small index, by means of which quick and accurate tests may be made.



The "Star" Registers on the $\frac{5}{8}$ inch, $\frac{3}{4}$ inch and $\frac{3}{4}$ inch size meters have a 1 foot test dial and 5 numbered wheels; those on the 1 inch and $1\frac{1}{2}$ inch sizes have a 10 foot dial and 5 numbered wheels; those on the 2 inch and 3 inch sizes have a 10 foot test dial and 6 numbered wheels; and those on the 4 inch and 6 inch sizes have a 100 foot test dial and 6 numbered wheels. In other words, the test dials and the highest recording capacity of the "Star" are exactly identical with those of the ordinary registers for the same size of meters.

The "Lambert" Meter, in all sizes from $\frac{5}{8}$ of an inch to 6 inches, inclusive, and the "Bee," in all sizes from $\frac{3}{4}$ of an inch to 6 inches, inclusive, are fitted with either the ordinary or the "Star" Register, as may be desired.

Please mention, in ordering meters, which style of meter and register is wanted.

The "Star" and the old style or ordinary registers, being interchangeable in the "Bee" and "Lambert" Meters, for all sizes, we can furnish the "Star," with register box complete, the latter of special pattern, to replace the ordinary register on "Bee" Meters.

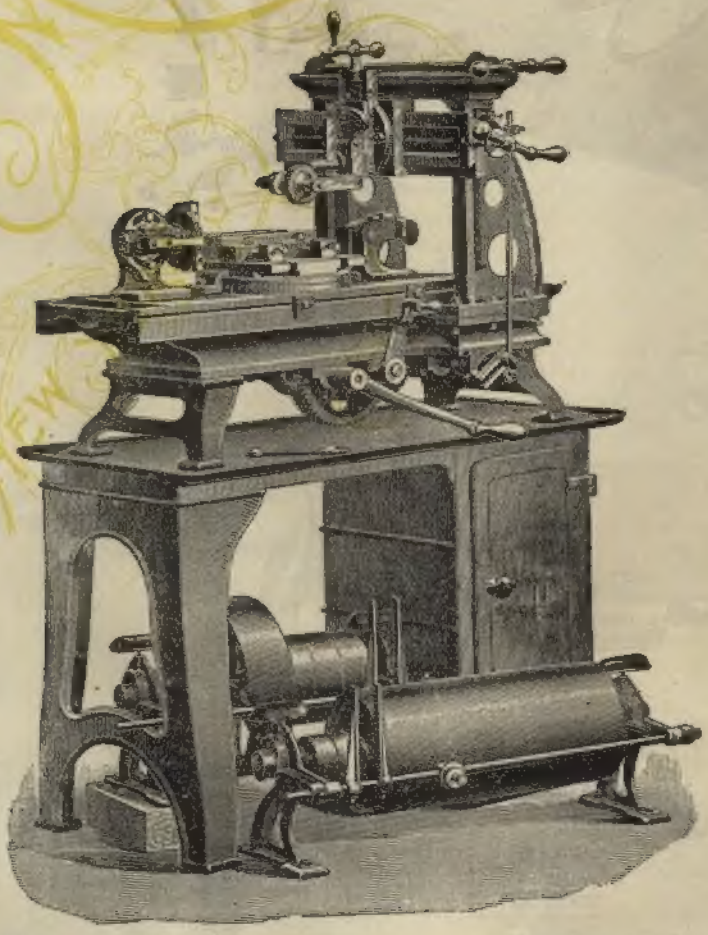
Thomson Meter Co. make all sizes from $\frac{1}{2}$ inch to 6 inch, both the "Lambert" and "Bee" styles—with either plain or Star dials. Prices and complete descriptive circulars upon application.

FEDERAL BENCH POWER PLANERS.

This Planer is calculated for small, light work, but is geared to give ample power to do the heaviest work that can be put on it. Though small, it is as complete in all its appointments as larger planers, and has all the usual conveniences for holding and adjusting the cutting tool, raising and lowering the cross-head, and securing the same in position. They can be set on the bench anywhere under a shaft, without any countershaft, and be run by using the hand shipper. Can be changed from power to hand power in one minute by putting on the hand wheel. We have a strong iron table to mount it on, the top of which is a handy place for the planer tools, besides being a good surface plate (it being planed true both top and bottom); also a chuck which is very handy for holding small work. It is graduated to be set at any angle, as is also the swivel of the planer cross-head, making it possible with the two combined to get a combination of angles on either side. It will hold work much longer than the jaws, which are 6 inches long and open three inches. Planes 24 inches long, 9 inches wide, 6 inches high.

Planer, alone	$110.00
Table (all iron)	12.00
Planer Chuck	15.00
Countershaft	7.00

THE WASHINGTON POWER OR HAND PLANER.



In the past, small planers have had single lifting screws to raise or lower the cross head, and have been of so light design as to be of little practical use. The makers of the hand and power planer shown in cut, have made a wide departure from old designs and have produced a small planer, from very heavy and well-proportioned patterns, mounted on a heavy cabinet bench, with shelf brackets inside and out. It is fitted with a rigid, quickly-adjusted, round, graduated-base planer chuck built to be used on this or other planers. Also with planer centers swinging 7 inches, having large range, and capable of being set for angular work. Making altogether a very complete and substantial machine tool.

No more power is required to run this planer by hand than is used on similar tools of less dimension. The lifting and cross head screws are steel, and the driving pinions have cut teeth. All the other gears have cut teeth. Head is graduated, and cross feed is simple.

The Round Graduated-Base Planer Chuck sold with this planer is ten inch diameter.

The Planer centers are seven inch swing, and adjustable to do straight or taper work, and although not highly finished they are well made.

Planer, with counter-shaft fitted with self-oiling boxes, and wrenches....$150.00

Net weight, 375 lbs.
Weight of Platen, 100 lbs.
Bench surface,
Speed of countershaft, 160 rev.
Loose and tight Pulley, 6 x 1¾ ins.
Planes, 30 ins long.
" 12½ " wide.
" 8½ " high.

Planer Bench, weight 225 lbs	$16.00
" Chuck, " 40 "	20.00
" Centers	15.00
Grinding attachment	10.00

UNIVERSAL BENCH LATHES.

No. 3. Universal Bench Lathe, with Four-Speed Counter and Grinding Drum.

1.—Cross belt reverse speed for lathe and grinding drum. 2.—Fast speed for drum. 3.—Fast speed for lathe. 4.—Slow speed for lathe.

For the tool-room, for experimental work, and for the technical departments of schools or colleges, this lathe, with its great variety of standard and interchanging attachments, will be found most useful. The variety of work that can be accomplished by these same attachments demonstrates that its trade name, "Universal Bench Lathe," is well applied.

The first impression of many parties to whom we have made sales is that it is too small or too light for their work, but investigation has proved to the contrary—that its field is larger than first supposed; that operations difficult or impossible on the usual small lathe in shop can be done on this one with quickness and dispatch; that it saves greatly in cost and time in its handiness of holding work by the drawing-in spindle in connection with inside and outside chucks, avoiding the usual time required to dog work, and the quick manipulation of counter and varying speeds by foot treadles.

The lathe has 7 inch swing over the ways, 5 inch swing over compound slide rest; distance between centers, 18 inches; hollow spindle in head stock; hole .6 inch diameter through the same. The bed of lathe is 32 inches long. It has V ways, to which the head and tail stocks are accurately fitted by scraping. In the back of bed a T groove is planed the entire length for attaching the back rest, half tail stock, milling fixtures or supports for different work. By using these attachments the slide and T rest can be moved to any desired position in the ways without interference.

The spindle is made of the best tool steel, is tempered to glass hardness, and accurately ground to bearing by special machinery and fixtures. With the spindle and its bearings, which are also hard, no pains are spared to make them mechanically perfect. The front bearing is a double taper, on both spindle and bushing, with nut to take up end chase. At the rear bearing the spindle is straight, running in a split bushing tapered on outside and running in corresponding solid bushing, with necessary tightening nut. These bearings are also hardened and ground, and both front and rear are provided with oil channels and brass dust caps. The spindle is hollow, having a hole .6 of an inch diameter through the same. The throat of the spindle is ground, running in position in its own bearings, to taper of 20°, the standard for taper on wire for spring chucks. The outside of front end of spindle is threaded to receive large face plate or scroll chucks. The position of the steps on cone is the reverse of common usage, merely for convenience and to lessen interference with light. The cone has three steps, 2½, 3½ and 4½ inches in diameter, 1¼ inch face. The larger flange on cone has two rows of index holes, carefully graduated. They are 60 and 48, giving subdivisions as follows: 60, 48, 30, 24, 20, 16, 15, 12, 10, 8, 6, 4, 3, 2, and are useful when grinding or making cutters, reamers, or milling small bolt heads. Between rear bearing and the handle of drawing-in spindle ample space is provided for gear of screw-cutting attachment, or to apply Worm Wheel Index.

Drawing-in Spindle.—This device is one which makes this style of lathe invaluable on small work, and while its advantages are well known among the watch tool makers and few similar lines, we find many who are still unacquainted with it. It consists of a hollow steel sleeve, with a hole .4 of an inch through same. The inside of front end is threaded to receive the shank of the split steel wire chucks, the expanding or inside chuck, and the step or face chuck, all of which are described among attachments. On the out end of this sleeve is a wood handle, a single turn of which operates all styles of split chucks. Various fixtures can be made on duplicates of the chuck shanks and be held in same manner.

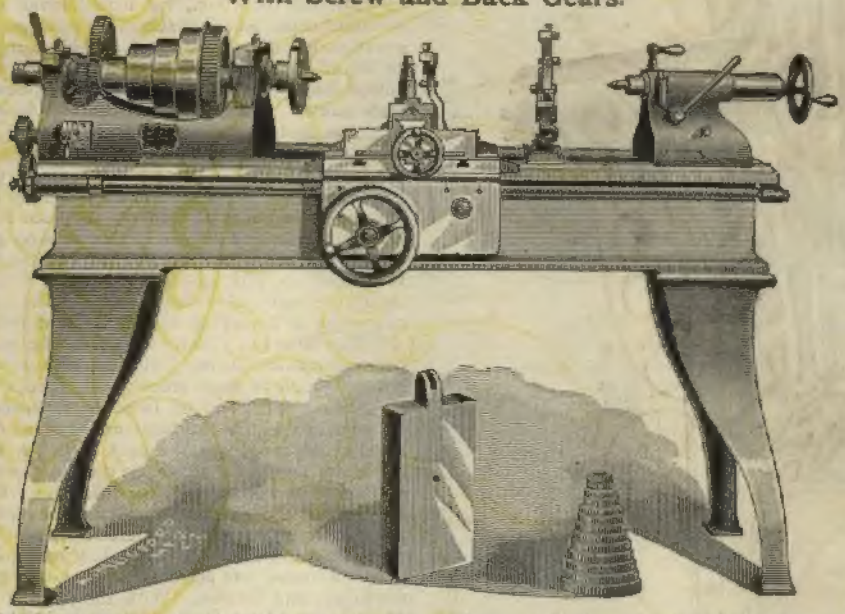
The spindle in the tail stock has a graduation in tenths of inches in plain sight of operator. This will be found useful in gauging depths of holes in drilling or counter-boring. The device for clamping spindle is novel and improved.

The lathe, as listed, includes two centers, one 3-inch face plate, one T rest, and shoe for same. Attachments are extras. They are all made to gauges, are interchangeable, and can be added to the outfit at any time as new work may demand them.

Lathe, 7-inch swing, 32-inch bed, including T rest, face plate, and 2 centers	$105.00
Screw-Cutting Attachment	80.00
Compound Slide Rest	50.00
Cut-Off Slide Rest	65.00
Index Milling Fixture	80.00
Worm Wheel Index	75.00
Vertical Drilling Attachment	50.00
Grinding Fixture (outside)	20.00
Grinding Fixture (inside)	30.00
Adjustable Half Tail Stock for T Groove	8.00
Back Rest for T Groove	5.00
Centre Rest	5.00
Two-inch Face Plate, $2.00; Three-in.,	2.50
Four-inch Face Plate..$3.00; Six-inch,	4.00
Tail Stock Face Plate	2.50
Saw Arbor, for holding saws	$5.00
Hardened Steel Split Chucks, 37 sizes, .04 to .40 inch...each, $2.50, per set,	92.50
Expanding Chucks	2.00
Face Chucks.....2-inch, $2.00, 3-inch,	3.00
Universal or Drill Chucks. Price on application.	
Fitting Chucks. Price on application.	
Six-inch Face Plate, with emery lap for facing work	8.00
Plain V Centre	2.00
Revolving V Centre	3.00
Grinding Drum and Adjustable Hangers	13.00
Two-Speed Counter	12.00
Four-Speed Counter	20.00
Main Line Pulleys, double.....each,	3.00

16-INCH WEIGHTED ENGINE LATHES.

With Screw and Back Gears.



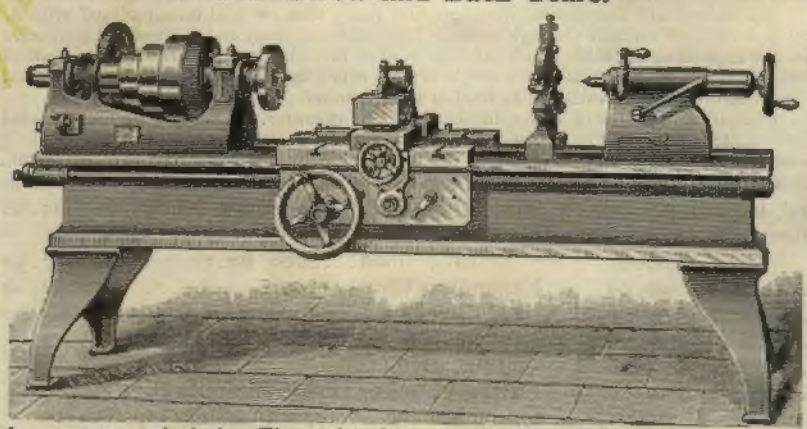
Swinging 16 inches over the bed and 6¾ inches over the carriage. The front bearing of the live spindle is 4½ inches long by 2¼ inches diameter. The cone, largest diameter 12⅜ inches, is driven by a belt 2½ inches wide. The hole through the spindle is ¾ in. diameter; screw thread on spindle for face-plate, 2¼ in. diameter, 6 pitch. With the usual set of gears, screws from 3 to 48 threads to the inch may be cut. Speed of countershaft, 12 x 4-inch friction pulleys, 120 revolutions per minute. This size of lathe is made, also, with gibbed carriage and cross-feed, at an advance in price of about $60. It swings 10¼ inches over the carriage. Lathe with 5-feet bed receives 2 feet between centers, and weighs 1,650 pounds. Beds 5 to 8 feet long with weighted carriage, and 5 to 12 feet long with gibbed carriage. Stationary and follow rests, large and small face-plates, wrenches, and countershaft are furnished with the lathe.

Without Screw Gear.

Swings 16 inches over the ways, and 6¾ inches over the carriage. Has balanced cone pulley for 4-inch belt. Head stock spindle has front bearing 2⅝ inches diameter, 4½ inches long, rear bearing 1⅝ inches diameter, 4 inches long, in cast-iron boxes, lined with compressed genuine Babbitt-metal. Screw thread on spindle for face plate 2¼ inches diameter, 6 pitch. Hole through spindle ¾ inch to 1¼ inches diameter, as may be ordered. The worm and friction feed is driven by gears and cone pulley, the latter of three grades, governing the changes of feed. A convenient stop-motion attached to the carriage may be adjusted for action at any point in its range. Wrenches, stationary and follow rests, and countershaft are furnished with the lathe. Lathe with bed 5 feet long receives 1¾ feet between centers, and weighs 1,725 pounds. Beds made 5 to 8 feet long. Back gears and Slate's patent taper attachment furnished to order. Speed of countershaft, with 12 x 3-inch tight and loose pulleys, 120 revolutions per minute. **Prices on application.**

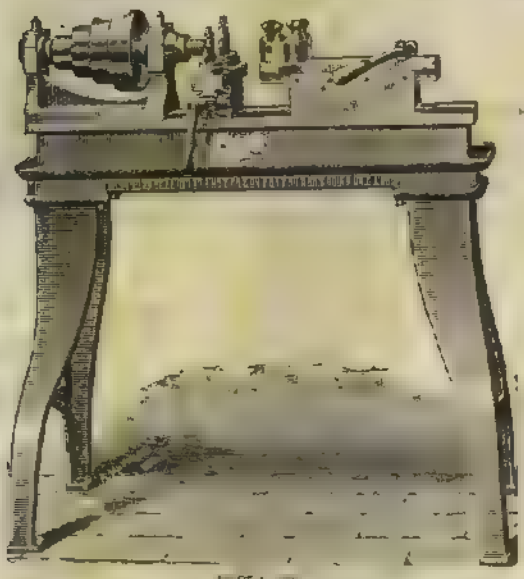
21-INCH GIBBED ENGINE LATHES.

With Screw and Back Gears.



The carriage of this lathe is gibbed its entire length on the outside of the bed, and is furnished with Pratt's Patent Tool Rest, by which the cutting tool may be instantly and accurately adjusted without being loosened in the post, and may be rigidly secured at any angle. The swing of the lathe is 21 inches over the bed and 14 inches over the carriage. The front bearing of the head-stock spindle is 3⅛ inches diameter and 5¼ inches long, in boxes lined with genuine Babbitt-metal. Screw thread on spindle for face plate 2¾ inches diameter, 5 pitch. The cone pulley, largest diameter 13 inches, is driven by a 3¼-inch belt. The hole through the spindle is of the same diameter as the small end of the center, 1⅛ inches. The usual set of gears permits a range of threads to be cut from 2 to 32 to the inch. The carriage has an automatic cross-feed. The small reversing gears are of wrought-iron. The countershaft having 14 x 4 inch friction pulleys, has speeds of 100 and 120 revolutions per minute. Slate's Taper attachment, as attached to this lathe, may be used at any point in the length of the bed. A non-elevating compound rest, furnished as an extra attachment at an additional price to order, can be fitted to the lathe before it leaves the works, to take the place of the elevating rest, the change from one rest to the other occupying but a few minutes; if furnished as a substitute for the elevating rest, the price is not changed. Stationary and follow rests, large face-plate, wrenches, and countershaft are included with the lathe. Lathe with 7-feet bed receives 3 feet and 3 inches between centers, and weighs 3,000 pounds. Beds made 7 to 22 feet long. Lathes swinging 19 inches over the bed are of similar construction. Price on application.

MONITOR LATHES, OR TURRET-HEAD CHUCKING MACHINES.



These machines are used for drilling, boring and reaming holes at a much faster rate and with more uniformity than similar work can be done on lathes formerly used for the purpose. They are also largely used to finish parts of machinery, cast or forged pieces of irregular outline and circular cross section, when fitted with necessary tools. The heads have provision for vertical and horizontal adjustment of the spindle in case its alignment with the turret hole is lost by wear. The spindles are made of hard steel, and have truly cylindrical bearings in boxes lined with genuine Babbitt-metal. The machines of 10 to 16 inches swing are furnished with cut-off rest. Those of 14 inches and larger swing are built to order with plain back gears, also with heads of three sizes having large spindle that may be instantly put into and out of connection with cone and back gears by means of a patented friction clutch, inside the cone, which is operated by a lever and drawback collet mechanism. Automatic feed and stop motion mechanism is applied to 16 inches and larger swing machines in building to order. The usual number of turret holes is six, but the number, as well as the diameter, may be changed in constructing the machine. A stop for gauging the length of cut is attached to the rear end of turret slide.

Machine of 10 inches swing has spindle with front bearing 1½ inches diameter, 3½ inches long, with ¾-inch hole through centre. The cone has four grades, largest diameter 7½ inches, for 2-inch belt. The turret, of 4 3/8 inches diameter, has six holes ⅞ inch diameter, centered 1¼ inches above the surface of the slide. Length that can be milled, 1⅞ inches. The number and diameter of turret holes may be changed in building to order. Countershaft has 9 x 3 inches friction pulleys, and should make 200 revolutions per minute for brass work, and 150 revolutions for iron work. A cut-off rest is furnished or not, as may be ordered. Weight of machine and countershaft, 465 pounds.

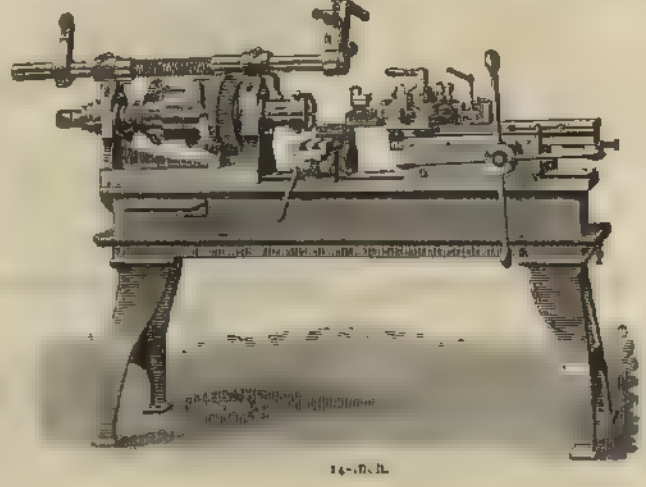
Machine of 12 inches swing has spindle with front bearing 1¾ inches diameter, 3¼ inches long, with 1⅛-inch hole through centre. The cone has four grades, largest diameter 9¾ inches, for 2½-inch belt. The turret, of 6 inches diameter, has 6 holes, 1⅛ inches diameter, centered 1 4 inches above the surface of the slide. A length of 2¾ inches can be milled. The number and diameter of turret holes may be varied in building to order. Countershaft has 10 x 3 inch friction pulleys, and should make 200 revolutions per minute for brass work and 150 revolutions for iron work. A cut-off rest is furnished or not, as may be ordered. Weight, with countershaft, 665 pounds.

Machine of 14 inches swing with friction clutch back gears, chasing apparatus and automatic feed for turret slide. The cut below shows two styles of box tools in turret and a box tool rest attached to the cut-off rest. These are only furnished to order. Has bed 4 feet 9 inches long, front bearing of spindle, 2 inches diameter, 4⅛ inches long; hole through centre of spindle 1½-inch diameter. Cone pulley has four grades, largest diameter 10½ inches, for 3-inch belt. The turret is 6 4 inches in diameter, with six holes 1 inch in diameter, which may be changed in number and size in building to order. Length that can be milled 4½ inches. Friction pulleys on countershaft, 12 x 4 inches, should make 200 revolutions per minute for brass work and 150 revolutions per minute for iron work. Weight of machine and countershaft, 1,150 pounds. A cut-off rest is furnished, or not, as may be desired, and the following attachments are furnished in building to order, viz., back gears, plain friction clutch with three sizes of spindles, draw back collet mechanism in three sizes spindles; chasing apparatus, and automatic feed for turret slide.

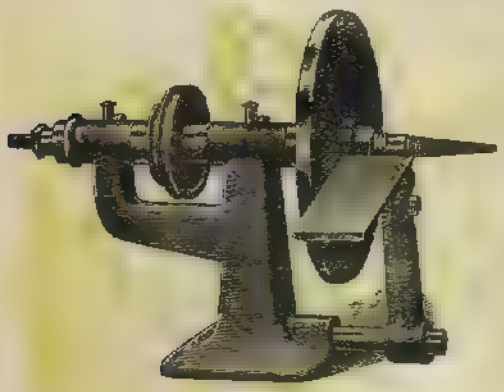
Machine of 18 inches swing has bed 6 feet 7 inches long. Front bearing of spindle, 3⅛ inches diameter, 5 inches long, hole through spindle of plain head, 1⅞ inches diameter. Cone pulley has four grades, largest diameter 13½ inches, for 3½-inch belt. Diameter of turret 11¾ inches. Holes in turret, six in number, 1½ inches diameter, may be changed in number and diameter in building to order. Length that can be milled, 10½ inches. Friction pulleys on countershaft, 14 x 4 inches, should make 160 revolutions per minute for brass work, and 100 revolutions per minute for iron work. Weight of machine and countershaft, 1,760 pounds.

The machine is built to order with automatic feed and stop motion for turret slide; plain back gear, with cone pulley 13 inches diameter in largest grade, for 2¾-inch belt: friction clutch back gear heads, regular, with 1⅝-inch hole through spindle; No. 1 special, with 2⅛ inch hole through spindle; No. 2 special, with 2⅝-inch hole through spindle; No. 3 special, with 3⅛-inch hole through spindle; heads with lever drawback collets, having holes through collets, respectively, regular, 1 3/16 inches; No. 1 special, 1 7/16 inches; No. 2 special, 2 5/16 inches; No. 3 special, 2 11/16 inches.

Prices on application.



14-inch.



LAP HEADS.

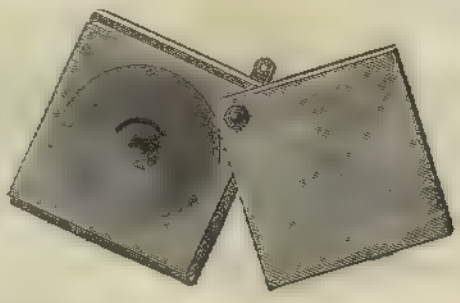
This head is built expressly for lapping, though it can be used also for polishing. The prominent features are, that the end of the spindle bears against the screw at the left end, with an intermediate piece between (both being hardened), thus preventing friction when pressure is brought against the lap. The rest can be adjusted to any angle, and the use of it will greatly assist in the lapping of difficult pieces.

Without lap.....each, $8.00
Height, 7 in., Spindle, 18 in. x ⅝ in. Weight, 15 lbs.

METAL LAPS.

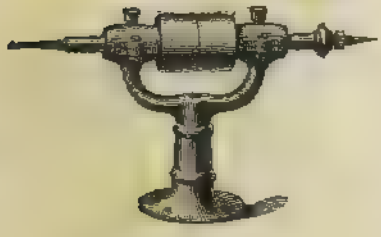
We furnish them from four to fourteen inches in diameter, and charge them with emery or corundum, coarse or fine, on one or both sides, as ordered. In ordering give exact size of spindle they are to fit. This cut represents a lap and the box in which we ship them. This box will be found very serviceable for holding the lap when not in use.

Price per inch in diameter.....$1.00



POLISHING LATHE HEADS.

With Babbitted Boxes.



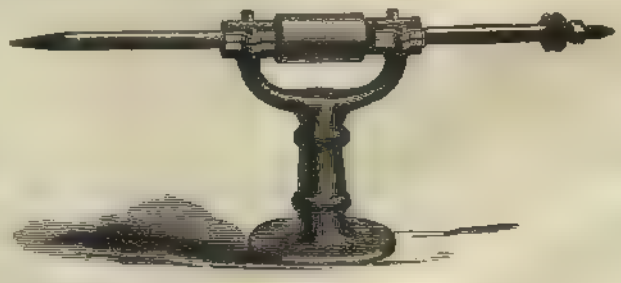
This lathe as shown in the cut stands 7¾ inches high, and has a spindle of 17½ inches long by ¾ inch in diameter, one end of which is a taper screw; the other end is furnished with a straight screw having two collars and a nut for holding lap, emery and other wheels; the distance between the collars is ⅝ inch. The straight screw is hollow and is furnished with a screw tapering to a fine point for the smallest brushes; this small taper screw can be removed when laps, etc., are being used. These heads have boxes for taking up the wear.

Each.....$9.00

LIGHT BUFFING LATHES.

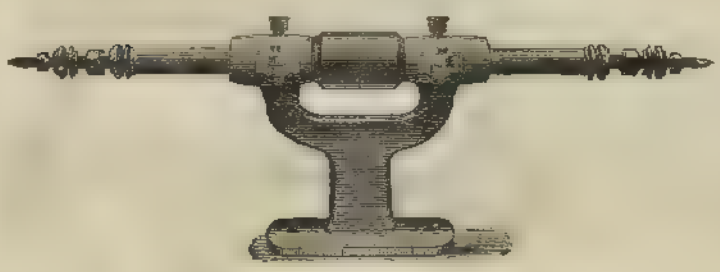
These lathes stand 12 inches high and have spindles 2 feet 9 inches long, 1¼ inches diameter, and weigh 49 pounds. They are made with collars on each end of the spindle, one collar and one screw, and two screws, also with fast and loose pulleys, and with one wide, fast pulley. The spindle between the collars is ¾ inch diameter. Unless otherwise stated, orders will be filled with tight and loose pulleys, and with one collar and one screw, as shown in cut.

Each.....$16.00



HEAVY BUFFING LATHES.

Four-Wheel.



This is similar to the No. 5 lathe, but has a spindle 3 feet 9 inches long, and arranged, as seen in the cut, for four wheels, and is made in the same styles as the No. 5 lathe. Weight, 100 pounds. The spindles between the collars are ¾ and 1 inch in diameter.

Each.....$30.00

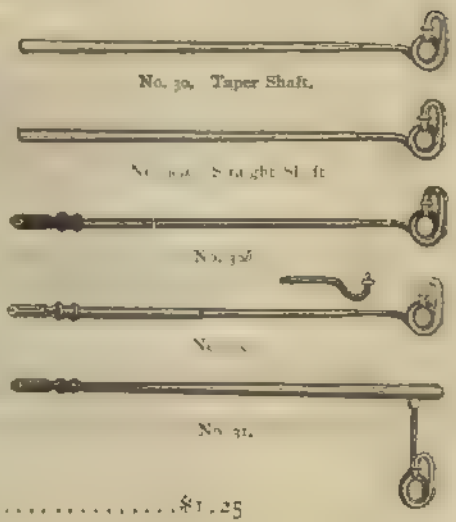
HOT BLAST MOUTH BLOW-PIPES.

No. 30.

Fletcher's Hot Blast Mouth Blow-Pipe.

Specially designed for Jewelers, Dentists, Chemists, etc. This has nearly double the power of the old mouth blow-pipe. Four patterns of this blow-pipe are manufactured, as specified below

No. 30	Taper Shaft, brass	$0.65
" 30a	Straight Shaft	.55
" 30b	Straight Shaft, with hard rubber mouth-piece	.75
" 30c.	Folding in case 5 x 1¼ x ½ in., with both fast and coiled blast jets	1 00
Hard Rubber Mouth-piece separately		.25



No. 31. Fletcher's Hot Blast Chemical Blow-Pipe.

A pattern of the ordinary chemical blow-pipe, with the patent hot blast arrangement. Hard rubber mouth-piece. Jets No. 65 size, unless otherwise ordered.

Price $1.25

CROW NEST,

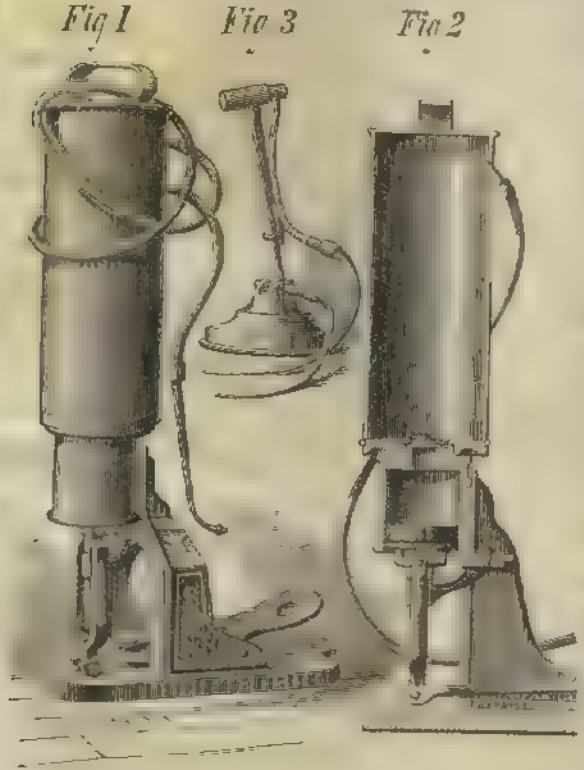
To slip over Common Burner.

Each ..... 25c.

BLACK'S BLOW-PIPE.

With brass tip ..... each, 50c.

BURGESS' MECHANICAL BLOW-PIPE.



It is a simple and efficient device for maintaining a continuous supply of air for blow-pipe use. It not only saves a great amount of labor, but it delivers a steadier and stronger blast than it is possible to maintain with the mouth, and it also enables the operator to get a better view of his work, and permits of greater freedom in the use of the hands.

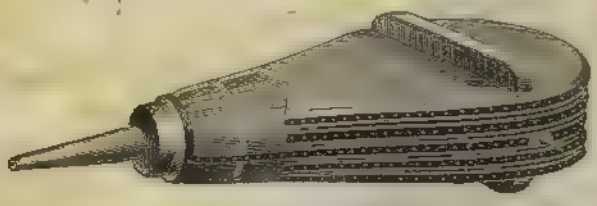
For light and delicate work, when a gentle flame is required, a pressure of one or two pounds is given, but for brazing, annealing, fusing, etc., when a large flame is necessary, a few rapid strokes of the plunger will raise the pressure in the receiver to from 10 to 12 pounds, which can be sustained with but little exertion. Under this pressure the air is driven through the minute opening in the blow-pipe nipple with great force, creating more heat, we believe, than when a larger jet of air is used under a low pressure, as with the bladder or bellows.

This device will be invaluable to Dentists, Jewelers, Chemists, Assayers, Metal Workers, Miners, and others who desire a strong, steady blast for reducing, fusing, soldering, hardening, etc. It is also of great utility to Machinists, and steam, water, and gas pipe fitters, in making alterations and repairs, as it admits of the local application of a strong heat, and thus obviates the necessity of removing the parts. The blow-pipe may be used effectively with a gas, alcohol, or oil flame, also for creating a draught in the use of charcoal or coke in connection with the small smelting furnaces now so largely in use.

The general appearance of the blow-pipe is shown in Fig 1 and its internal construction will be readily understood by referring to Fig. 2, which is a central vertical section. Fig. 3 represents a Compound Bench Blow-pipe, which possesses a rocking motion, enabling the flame to be used in any position. The machine is light and portable, weighing about twelve pounds, and measuring 24 inches in height. The pump cylinder is 2¼ inches in diameter, with 3-inch stroke. Its construction is very simple, and, with ordinary care, will last for years by an occasional drop of oil to moisten the leather packing ring.

Mechanical Blow-pipe, complete	each,	$10.00
Compound Bench-pipe, for use in connection with the pump	"	2.00
Compound Hand-pipe, similar to above, but without stand	"	1.50

BLACKSMITHS' BELLOWS.



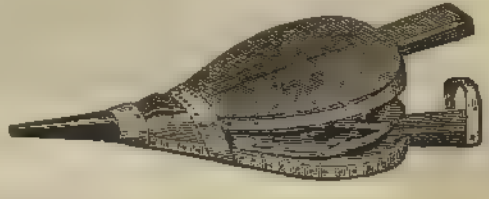
Standard Bellows.

Length, inches,	18 to 24,	26,	28,	30,	32,	34,	36,	38,	40,	42,	44,
Each	$10 00	11 00	12.00	13.00	14.00	16.00	18.00	20.00	23.00	32.00	34.00

Extra Long Blacksmiths' Bellows.

Length, inches	24,	26,	28,	30,	32,	34,	36,
Each	$12 00	13.00	14.00	15.00	17.00	19.00	21.00
Length, inches	38,	40,	42,	44,	46,	48,	50,
Each	$24.00	28.00	34.00	40.00	45.00	50.00	60.00

HAND BELLOWS.

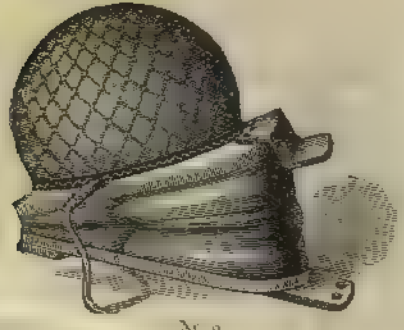


Inch	5,	6,	7,	8,	9,	10,	12,
Per doz.	$7.00	8.00	9.00	10.00	11.00	12.00	14.00

MOULDERS' BELLOWS.

Inch	9,	10,	11,	12,	13,	14,	16,
Per dozen	$15.00	17.00	20.00	24.00	26.00	28.00	33.00

FOOT BELLOWS, No. 9.



No 9

A rubber disc forms the air reservoir and equalizes the pressure. In three sizes, as follows:

Size of boards.	Pressure of blast.	Cubic ft. of air per hour.	Diameter of air reservoir.
7¾ x 9	1 lb.	190	7¾ in.
10 x 11	1½ lbs.	330	9 in.
11½x13¾	1¾ lbs.	625	11 in.

The No. 9 bellows has a single disc, the No. 9*a* double, and the No. 9*b* treble discs.

No 9, each	$4.00
" 9*a*, "	5.00
" 9*b*, "	7 00
Extra rubber discs for No 9, each	.40
" " " " " 9*a*, "	.65
" " " " " 9*b*, "	.90
Extra nets, each	.35

FOOT BELLOWS, No. 10.

New Pattern.

This pattern, by reversing the position of the blower, does away with the risk of mechanical injury to the disc, and obviates the necessity for a wood casing or protection. It also prevents the valve from picking up dirt from the floor, keeping the whole arrangement cleaner and the valves in more perfect order. Sizes as No. 9.

No. 10, new pattern, each	$5.00
" 10*a*, " " "	6.00
" 10*b*, " " "	8.00

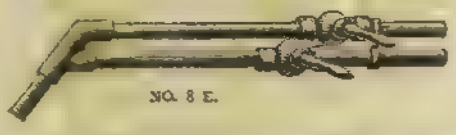
No 10 New style

FULTON BRAZING BLOW-PIPES.

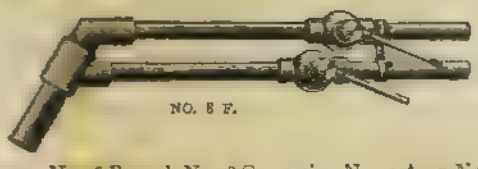
NO. 8 C.

No. 8 B.—⅛-inch air jet, ¼-inch gas opening, without stop-cocks. Requires ⅜-inch gas supply pipe and tap. Each, $1.75.

No. 8 C.—⅛-inch air jet, ¼-inch gas opening, with stop-cocks. Requires ⅜-inch gas supply pipe and tap. Each, $2.50.

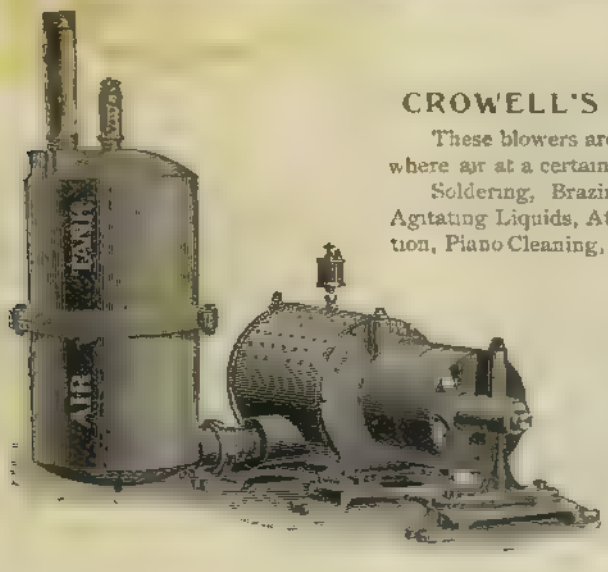

NO. 8 E.

No. 8 E.—$\frac{3}{16}$-inch air jet, ⅜-inch gas opening, with stop-cocks. Requires ½ inch gas supply pipe and tap. Each, $3.50.


NO. 8 F.

No 8 F. $\frac{5}{16}$-inch air jet, 1-inch gas opening, with stop-cocks. New pattern for large work. Requires ¾-inch gas supply pipe and tap. Each, $4.50.

No. 8 B and No. 8 C require No. 9 A or No. 10 A Foot Blower.
No. 8 E and No. 8 F " No. 9 B or No. 10 B " "
More satisfactory results, however, are obtained by using a power blower.



CROWELL'S POSITIVE PRESSURE BLOWERS.

These blowers are in successful operation in many classes of work where air at a certain pressure is required, such as:—

Soldering, Brazing, Sand Blast, Melting of Metals, Glasswork, Agitating Liquids, Atomizers, Court Plaster, Increasing Draft or Ventilation, Piano Cleaning, Etc.

They will give any desired pressure up to 8 lbs. to the square inch.

Following are some of the advantages of this blower. Simplicity of construction, little power required, run at slow speed, and give positive blast even through the smallest aperture

Sold with the air tank as in cut or without.

LIST OF PRICES AND DIMENSIONS.

No. of Blower.	Price complete as per cut.	Price without air tank and valve.	Diameter of Cylinder.	Diameter of Pulleys.	Face of Pulleys.	Revolutions per minute.	Horse power required.	Cubic inches delivered per revolution	Pressure to
1	$33	$23	4½"	3"	1"	600	¼	15"	8 lbs
2	39	29	6"	4"	1½"	400	½	40"	"
3	50	40	8"	5"	2½"	300	¾	90"	"
4	60	50	8"	7"	3"	250	1	200"	"
5									
6									

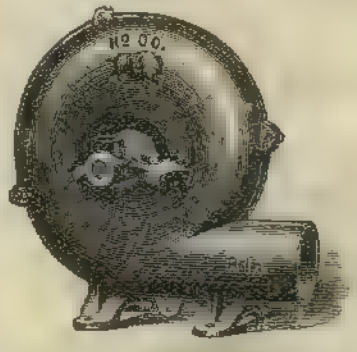
THE BUFFALO STEEL PRESSURE BLOWERS.

Size, Inches	No. of Blower	Diam. of Pulley	Face of Pulley.	Diam of Outlet	Without Countersh ft
12	1				$12.00
16	2	2	2	4	18.00
20	3	2½	2	4⅝	26.00
24	4	3	2½	5	36.00
26	5	3⅞	3	5¼	44.00
30	6	4¼	3½	6⅛	55.00
35	7	4⅝	3½	7⅛	70.00
40	8	5	5½	8⅛	90.00
45	9	6½	5½	10¼	115.00
53	10	7¼	5½	11½	160.00
	10½	7½	6½	13½	180.00
	11	8½	6½	14	225.00
	11½	9	7	16	275.00
	12	9½	7½	20	325.00

Be sure and state what they are to be used for, whether cupola furnaces or forges, or other purposes. If for cupolas, state diameter inside of lining, number and size of tuyeres, quantity to be melted in given time, kind of fuel used, distance blower sets from cupola; if for forges, how many, length of pipe, etc.

THE BUFFALO BLOWERS.

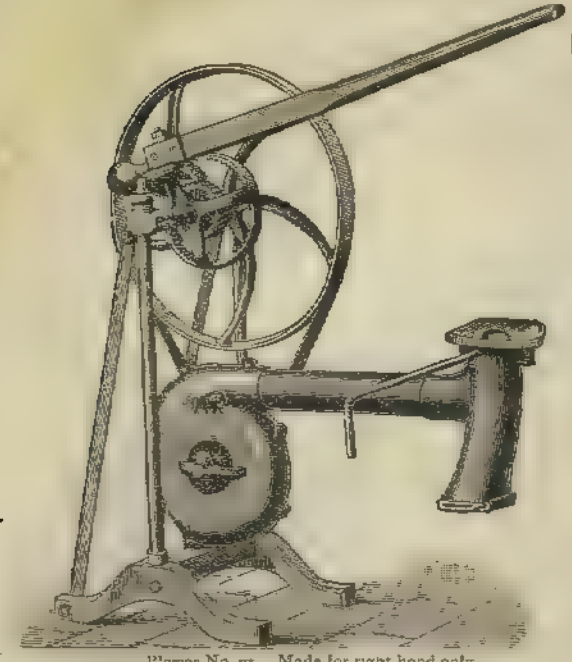
This blower is made on the same principle as the steel pressure blower, but not so highly finished nor as durable. They work perfectly noiseless, and will give as large a volume of air in proportion to the sizes, but not with the same amount of pressure. They are especially intended for blowing fires in portable and small stationary boilers, experimenting, and various purposes where a small current of air is desired. Also, for forge fires: No. 00 giving blast for one fire, No. 0 will blow two fires and No. 1 will furnish sufficient blast for four fires.



Nos	00	0	1
Diameter	8	12	18 inch.
Each	$8 00	10.00	14.00

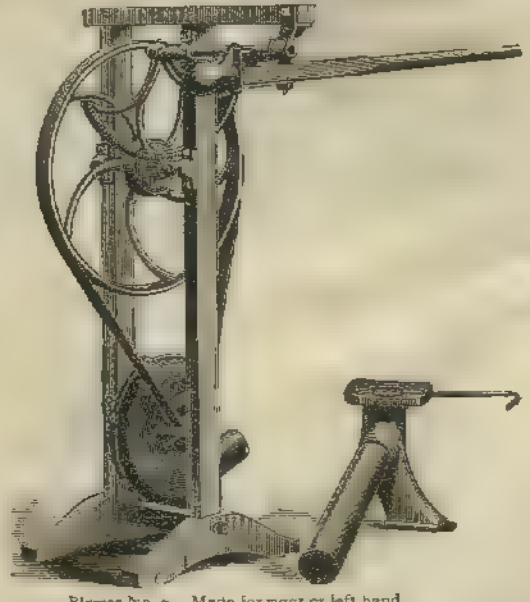
Arranged for exhausting purposes, $2.00 extra.

BUFFALO HAND BLOWERS.



Blower No. 01. Made for right hand only

Upright Blower No. 01, with tuyere, complete, $25 00
" " " 01, without tuyere..... 23.00
Weight, 120 lbs. With tuyere, 140 lbs. Fan, 14 in.



Blower No. 3. Made for right or left hand

Upright Blower No. 3, with tuyere..... $25 00
" " " 3, without tuyere.... 23.00
Weight, 110 lbs. With tuyere, 130 lbs. Fan, 14 in.

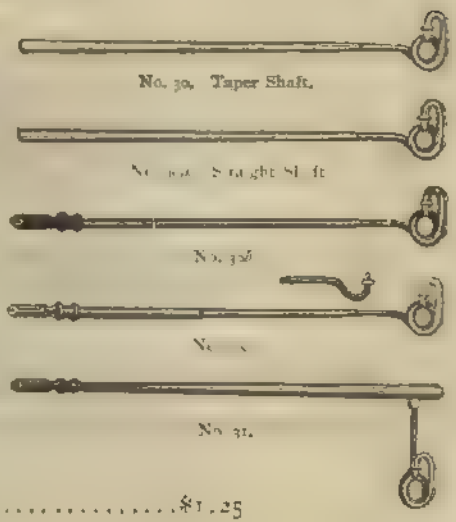
HOT BLAST MOUTH BLOW-PIPES.

No. 30.

Fletcher's Hot Blast Mouth Blow-Pipe.

Specially designed for Jewelers, Dentists, Chemists, etc. This has nearly double the power of the old mouth blow-pipe. Four patterns of this blow-pipe are manufactured, as specified below

No. 30	Taper Shaft, brass	$0.65
" 30a	Straight Shaft	.55
" 30b	Straight Shaft, with hard rubber mouth-piece	.75
" 30c.	Folding in case 5 x 1¼ x ½ in., with both fast and coiled blast jets	1 00
Hard Rubber Mouth-piece separately		.25



No. 31. Fletcher's Hot Blast Chemical Blow-Pipe.

A pattern of the ordinary chemical blow-pipe, with the patent hot blast arrangement. Hard rubber mouth-piece. Jets No. 65 size, unless otherwise ordered.

Price $1.25

CROW NEST,

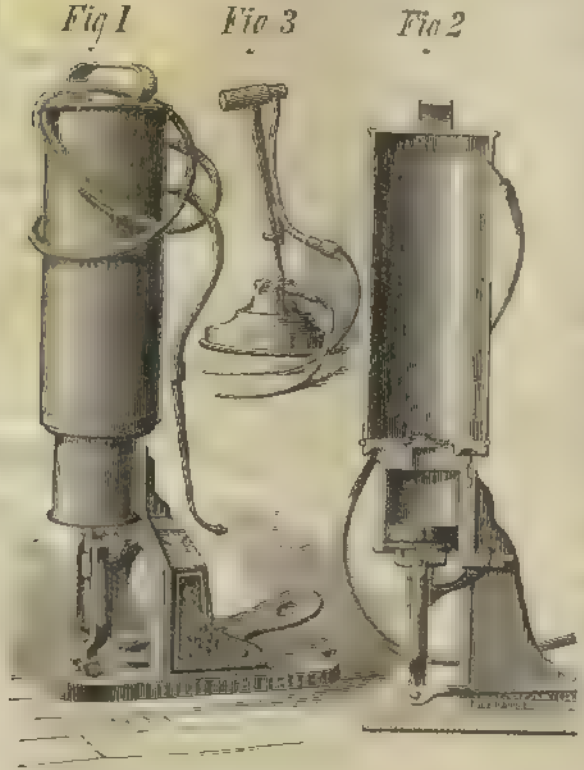
To slip over Common Burner.

Each ..... 25c.

BLACK'S BLOW-PIPE.

With brass tip ..... each, 50c.

BURGESS' MECHANICAL BLOW-PIPE.



It is a simple and efficient device for maintaining a continuous supply of air for blow-pipe use. It not only saves a great amount of labor, but it delivers a steadier and stronger blast than it is possible to maintain with the mouth, and it also enables the operator to get a better view of his work, and permits of greater freedom in the use of the hands.

For light and delicate work, when a gentle flame is required, a pressure of one or two pounds is given, but for brazing, annealing, fusing, etc., when a large flame is necessary, a few rapid strokes of the plunger will raise the pressure in the receiver to from 10 to 12 pounds, which can be sustained with but little exertion. Under this pressure the air is driven through the minute opening in the blow-pipe nipple with great force, creating more heat, we believe, than when a larger jet of air is used under a low pressure, as with the bladder or bellows.

This device will be invaluable to Dentists, Jewelers, Chemists, Assayers, Metal Workers, Miners, and others who desire a strong, steady blast for reducing, fusing, soldering, hardening, etc. It is also of great utility to Machinists, and steam, water, and gas pipe fitters, in making alterations and repairs, as it admits of the local application of a strong heat, and thus obviates the necessity of removing the parts. The blow-pipe may be used effectively with a gas, alcohol, or oil flame, also for creating a draught in the use of charcoal or coke in connection with the small smelting furnaces now so largely in use.

The general appearance of the blow-pipe is shown in Fig 1 and its internal construction will be readily understood by referring to Fig. 2, which is a central vertical section. Fig. 3 represents a Compound Bench Blow-pipe, which possesses a rocking motion, enabling the flame to be used in any position. The machine is light and portable, weighing about twelve pounds, and measuring 24 inches in height. The pump cylinder is 2¼ inches in diameter, with 3-inch stroke. Its construction is very simple, and, with ordinary care, will last for years by an occasional drop of oil to moisten the leather packing ring.

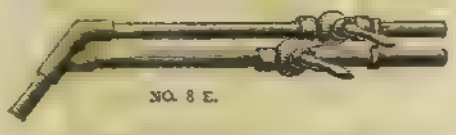
Mechanical Blow-pipe, complete	each,	$10.00
Compound Bench-pipe, for use in connection with the pump	"	2.00
Compound Hand-pipe, similar to above, but without stand	"	1.50

FULTON BRAZING BLOW-PIPES.

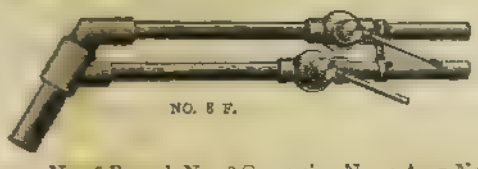
NO. 8 C.

No. 8 B.—⅛-inch air jet, ¼-inch gas opening, without stop-cocks. Requires ⅜-inch gas supply pipe and tap. Each, $1.75.

No. 8 C.—⅛-inch air jet, ¼-inch gas opening, with stop-cocks. Requires ⅜-inch gas supply pipe and tap. Each, $2.50.


NO. 8 E.

No. 8 E.—$\frac{3}{16}$-inch air jet, ⅜-inch gas opening, with stop-cocks. Requires ½ inch gas supply pipe and tap. Each, $3.50.


NO. 8 F.

No 8 F. $\frac{5}{16}$-inch air jet, 1-inch gas opening, with stop-cocks. New pattern for large work. Requires ¾-inch gas supply pipe and tap. Each, $4.50.

No. 8 B and No. 8 C require No. 9 A or No. 10 A Foot Blower.
No. 8 E and No. 8 F " No. 9 B or No. 10 B " "
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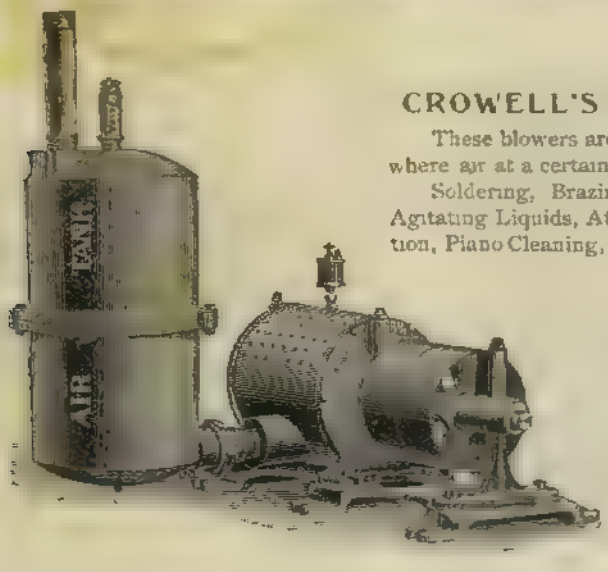

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They will give any desired pressure up to 8 lbs. to the square inch.

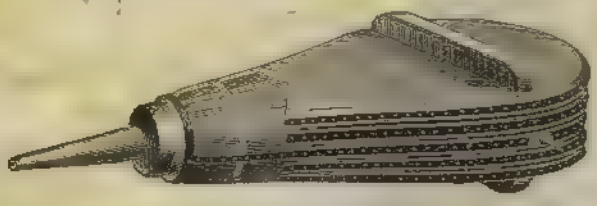
Following are some of the advantages of this blower. Simplicity of construction, little power required, run at slow speed, and give positive blast even through the smallest aperture

Sold with the air tank as in cut or without.

LIST OF PRICES AND DIMENSIONS.

No. of Blower.	Price complete as per cut.	Price without air tank and valve.	Diameter of Cylinder.	Diameter of Pulleys.	Face of Pulleys.	Revolutions per minute.	Horse power required.	Cubic inches delivered per revolution	Pressure to
1	$33	$23	4½"	3"	1"	600	¼	15"	8 lbs
2	39	29	6"	4"	1½"	400	½	40"	"
3	50	40	8"	5"	2½"	300	¾	90"	"
4	60	50	8"	7"	3"	250	1	200"	"
5									
6									

BLACKSMITHS' BELLOWS.



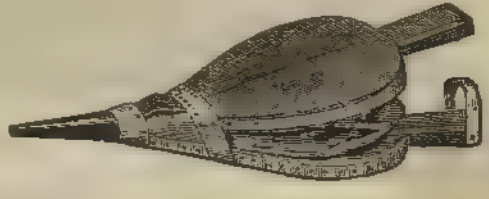
Standard Bellows.

Length, inches,	18 to 24,	26,	28,	30,	32,	34,	36,	38,	40,	42,	44,
Each	$10 00	11 00	12.00	13.00	14.00	16.00	18.00	20.00	23.00	32.00	34.00

Extra Long Blacksmiths' Bellows.

Length, inches	24,	26,	28,	30,	32,	34,	36,
Each	$12 00	13.00	14.00	15.00	17.00	19.00	21.00
Length, inches	38,	40,	42,	44,	46,	48,	50,
Each	$24.00	28.00	34.00	40.00	45.00	50.00	60.00

HAND BELLOWS.

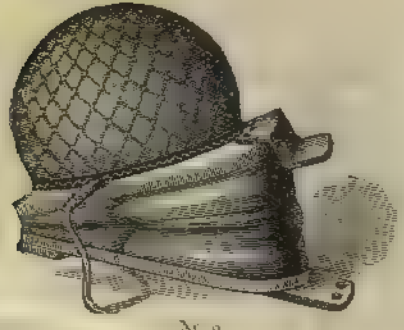


Inch	5,	6,	7,	8,	9,	10,	12,
Per doz.	$7.00	8.00	9.00	10.00	11.00	12.00	14.00

MOULDERS' BELLOWS.

Inch	9,	10,	11,	12,	13,	14,	16,
Per dozen	$15.00	17.00	20.00	24.00	26.00	28.00	33.00

FOOT BELLOWS, No. 9.



No 9

A rubber disc forms the air reservoir and equalizes the pressure. In three sizes, as follows:

Size of boards.	Pressure of blast.	Cubic ft. of air per hour.	Diameter of air reservoir.
7¾ x 9	1 lb.	190	7¾ in.
10 x 11	1½ lbs.	330	9 in.
11½x13¾	1¾ lbs.	625	11 in.

The No. 9 bellows has a single disc, the No. 9*a* double, and the No. 9*b* treble discs.

No 9, each	$4.00
" 9*a*, "	5.00
" 9*b*, "	7 00
Extra rubber discs for No 9, each	.40
" " " " " 9*a*, "	.65
" " " " " 9*b*, "	.90
Extra nets, each	.35

FOOT BELLOWS, No. 10.

New Pattern.

This pattern, by reversing the position of the blower, does away with the risk of mechanical injury to the disc, and obviates the necessity for a wood casing or protection. It also prevents the valve from picking up dirt from the floor, keeping the whole arrangement cleaner and the valves in more perfect order. Sizes as No. 9.

No. 10, new pattern, each	$5.00
" 10*a*, " " "	6.00
" 10*b*, " " "	8.00

No 10 New style

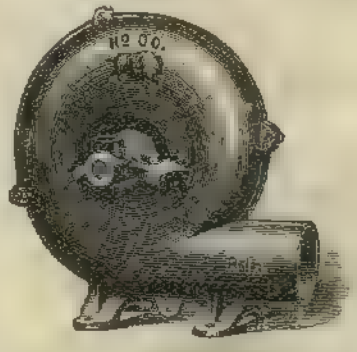
THE BUFFALO STEEL PRESSURE BLOWERS.

Size, Inches	No. of Blower	Diam. of Pulley	Face of Pulley.	Diam of Outlet	Without Countersh ft
12	1				$12.00
16	2	2	2	4	18.00
20	3	2½	2	4⅝	26.00
24	4	3	2½	5	36.00
26	5	3⅞	3	5¼	44.00
30	6	4¼	3½	6⅛	55.00
35	7	4⅝	3½	7⅛	70.00
40	8	5	5½	8⅛	90.00
45	9	6½	5½	10¼	115.00
53	10	7¼	5½	11½	160.00
	10½	7½	6½	13½	180.00
	11	8½	6½	14	225.00
	11½	9	7	16	275.00
	12	9½	7½	20	325.00

Be sure and state what they are to be used for, whether cupola furnaces or forges, or other purposes. If for cupolas, state diameter inside of lining, number and size of tuyeres, quantity to be melted in given time, kind of fuel used, distance blower sets from cupola; if for forges, how many, length of pipe, etc.

THE BUFFALO BLOWERS.

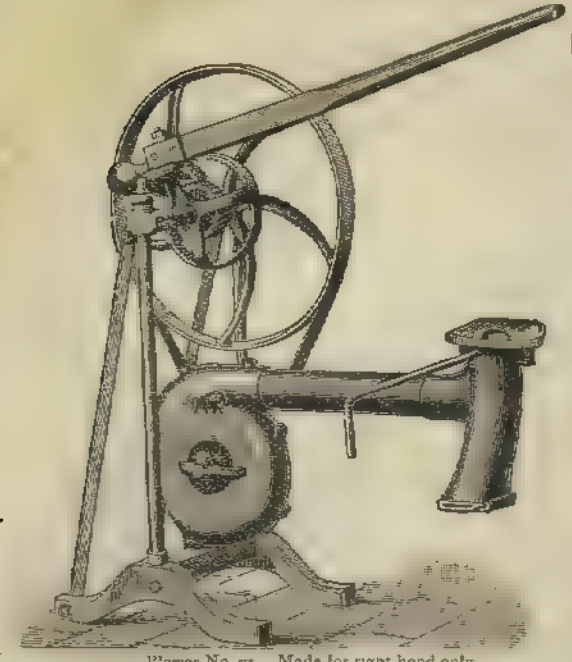
This blower is made on the same principle as the steel pressure blower, but not so highly finished nor as durable. They work perfectly noiseless, and will give as large a volume of air in proportion to the sizes, but not with the same amount of pressure. They are especially intended for blowing fires in portable and small stationary boilers, experimenting, and various purposes where a small current of air is desired. Also, for forge fires: No. 00 giving blast for one fire, No. 0 will blow two fires and No. 1 will furnish sufficient blast for four fires.



Nos	00	0	1
Diameter	8	12	18 inch.
Each	$8 00	10.00	14.00

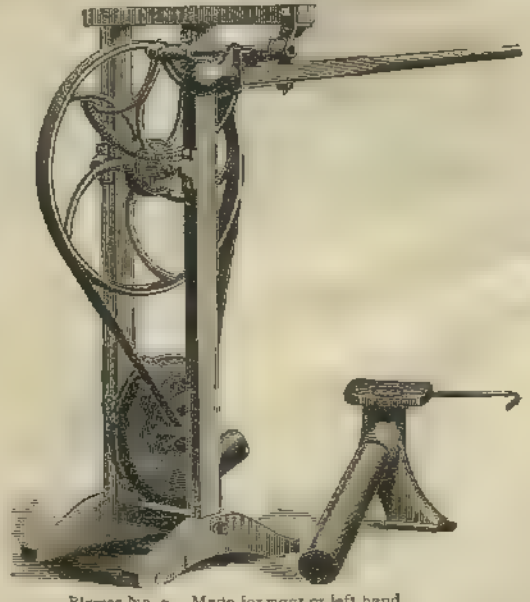
Arranged for exhausting purposes, $2.00 extra.

BUFFALO HAND BLOWERS.



Blower No. 01. Made for right hand only

Upright Blower No. 01, with tuyere, complete, $25 00
" " " 01, without tuyere..... 23.00
Weight, 120 lbs. With tuyere, 140 lbs. Fan, 14 in.



Blower No. 3. Made for right or left hand

Upright Blower No. 3, with tuyere..... $25 00
" " " 3, without tuyere.... 23.00
Weight, 110 lbs. With tuyere, 130 lbs. Fan, 14 in.

ROUND IRON SHEARS.

Parties who have quantities of round iron rods and bolts to cut off to lengths should have one of these tools. Do not hack the iron all around with a cold chisel, whack it over the anvil and then hammer the burr off both pieces but use one of these shears, which, having the holes through castings and cutting knives, make the size of the bar cuts without making any burr, directly across the iron, and insuring that the piece will not be spread in shearing. We do not guarantee shears to cut steel, except upon special application, stating size and quality of steel.

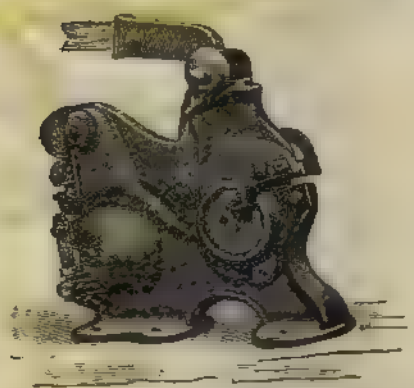
No. 0	will cut	¼ inch and smaller	$ 6.00
" 1	"	5/16, ⅜ and ½	10 00
" 2	"	⅝, ¾ " 1	14.00
" 3	"	½, ⅞ " 1⅛	18.00
" 4	"	⅝, 1 " 1⅜	23 00
" 5	"	¾, ⅞ " 1½	35.00
" 6	"	⅞, ¾, ⅝ and ½	45.00
" 7	"	1, ⅞, ¾, ⅝ and ½	60.00
" 8	"	1⅛, 1, ⅞, ¾, ⅝ and ½	80.00

WIRE CUTTERS.

These Cutters cut wire rods in shorter lengths to gauge than any other in the market without leaving burr. It has 14 holes graduated from ¼ inch to smallest size, and are in use and endorsed by the leading machinists in the country. For strength, simplicity, and durability, and ease of cutting rods, we claim it superior to any Cutter ever made. No springs to get out of order. Can be put into vise, or on bench and screwed down.

Each..... $5.00

PATENT COMBINED HAND PUNCH AND SHEAR.



These machines will be found very useful tools for general use, as they are a combination of the Round and Flat Iron Shears and the Hand Punch, and the workmanship put upon them is of the best, no casting fits, but all parts are carefully fitted by hand or machine.

No 0, will cut ⅜ wire, and smaller, and will punch ⅝ in. hole in, and cut thin hoop iron each, $15.00
No. 2, will cut ½, ¾ and ¼ inch round iron, and 2x¼ bar iron, will punch ¼ in. holes in ¼ iron, 3¾ inches from edge to centre of hole. Weight, 200 lbs.. ..... " 50.00
Extra Punches and Dies.....per pair. 2.50
No. 3, will cut ¾, ⅝ and ½ in. round iron, and 3½ x ⅜ bar iron, will punch ⅜ in. hole in ⅜ iron, 4 in. from edge to centre of hole. Weight, 450 lbs .... each, 100.00
Extra Round Punches and Dies..... .. ..per pair, 4.00
Extra Square Punches and Dies..... " 6.00
Punch and Die for tenoning in ¼ iron..... 10.00

One Punch and Die only with each machine.

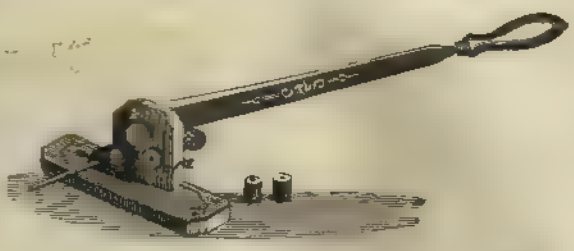
BENCH SHEAR AND SHEET-IRON CUTTER.

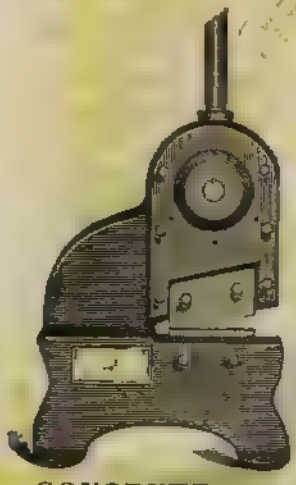
	Each.
No. 1, This machine is designed to cut sheet iron any width and any thickness up to ⅜ in. Weight, 11 lbs.....	$ 7.00
No. 2, This shear is of the same design as No. 1. It will cut sheet iron up to ⅝ in. in thickness. Weight, 27 lbs..	12.00
No. 3, has a compound lever, which increases its power, will cut sheet iron to ¼ in. in thickness. Weight, 55 lbs..	20.00

IMPROVED LEVER SHEARS.

This cut represents a very handy tool for any one having a great deal of wire to cut up into small pieces. It has an adjustable gauge so that any number of pieces can be cut the same length without having to measure each piece, and does the work very rapidly. It will cut any size wire not larger than three-sixteenths inch.

Each..... $4.00





THE AMERICAN BENCH SHEARS.

Is a strong and well made tool, adapted to shop or store use, for cutting sheets, plates and bars of any width or length, and not exceeding ⅛ inch thick. The tool is powerful and compact, occupying only 4 x 12 in. bench room.

Stroke of plunger, 7 inch. Shear blades of extra cast steel, ½ x 2¼ and 4 inches long. Lever 18 inches long, multiplies power applied 35 times. Can be arranged for power if desired.

Weight of Hand Shears..... 65 lbs.
Each..... $20.00
Weight of Power Shears..... 120 lbs.
Each..... $25.00

CONCENTRATED POWER SHEARING AND PUNCHING MACHINES.

Nos. 1 and 2.

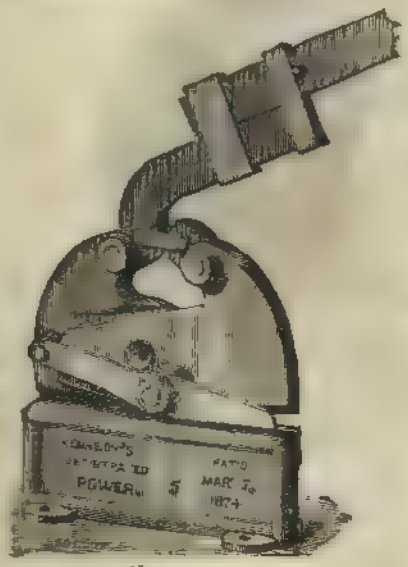
No. 1, Bar shear, cuts ⅜ x 1½ in. iron bar, and ¼ in. round rod. Weight, 15 lbs. $10.00

No. 2, Bar shear, cuts ¼ x 2 in. iron bar, and ⅜ in round rod. Weight, 30 lbs. 20.00

No. 3, Bar shear, cuts ⅜ x 4 in. iron bar, and ⅝ in. and smaller round rod. Weight, 175 lbs. 60.00

No. 4, Plate shear, cuts ¼ in. sheet metal, any width, ½ in. round rod. Weight, 165 lbs. 50.00

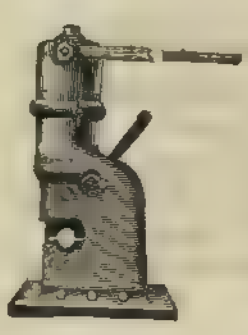
No. 5, Plate shear, cuts $\frac{5}{16}$ in. sheet metal, any width, ⅝ in. round rod. Weight, 300 lbs. 75.00



Nos. 4, 5, and 6.

No. 6, Plate shear, cuts ⅜ in sheet metal, any width. ⅞ in. round rod. Weight, 600 lbs. $110.00

Levers on Nos. 4, 5, and 6 Shears, are reversible.



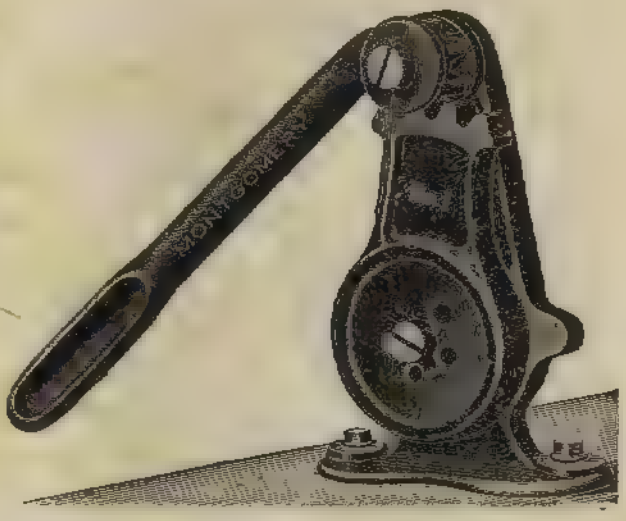
HYDRAULIC STEEL CABLE SHEARS.

This tool was specially designed for cutting steel cables, which it does very effectively, making a clean cut. Hammered iron body, gun-metal pump and wrought iron plunger, cast iron shoe; one pair steel shear blades.

No. 1, To shear steel cable, 1⅝ in. diameter..... each, $280 00
Extra pair shear blades..... 18.00
No. 2, Same as No. 1, with extra pair shear blades to cut bar iron, 2½ x ⅝ inches..... each, 300.00
Extra pair blades for same..... 16.00

Approximate weight of either No., 330 lbs

THE MONTGOMERY SHEAR.



This cut represents our New No. 1 Rod Cutter, for cutting iron, brass or steel rods, from the smallest size wire to ⅜ inch in diameter.

The cutting dies are manufactured of the best cast steel, particular attention being given to tempering, and every part is so constructed as to make it the strongest and most powerful cutter on the market.

It is a great improvement over the old style of cutters, inasmuch as it does the work nice and clean, leaving the ends of the bar or rod nearly even. It is very convenient in a shop where steel wire or rods are used, and it is put on the market at such a low figure that no one can afford to be without one or more of them.

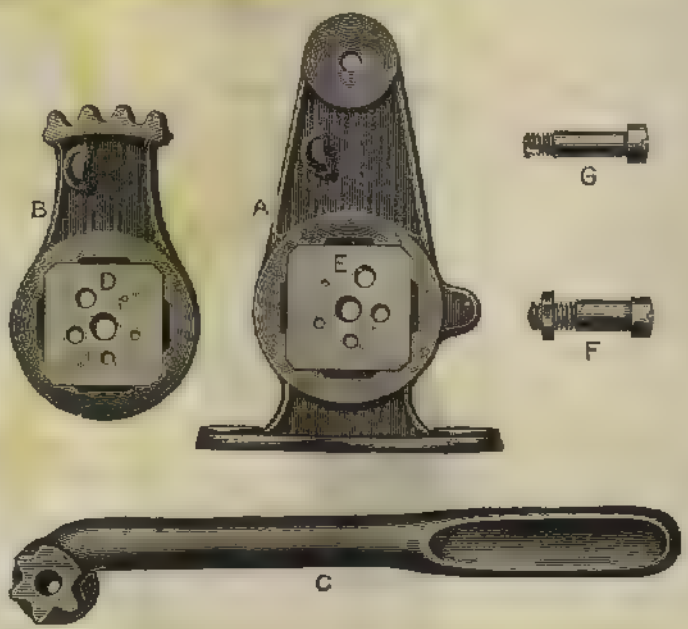
Every cutter is tested to its utmost capacity before leaving the factory.

We specially recommend them to dealers in window shades to use in cutting rods for drawn curtains, etc.

We have in course of production a larger size, No 2, to cut rods from ⅜ to ⅝ inch diameter, by sixteenths.

All parts of the No. 1 are interchangeable, and can be furnished promptly in case of an accident.

No 1 ..... each, $6.00

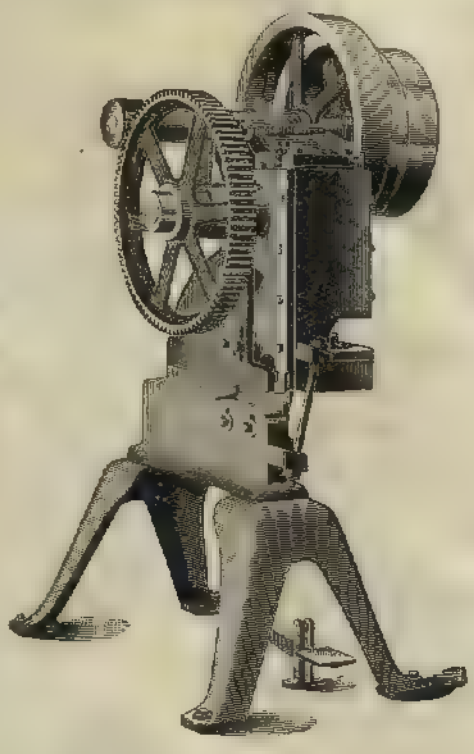


Parts for No. 1, as shown in cut.

A.	Body of cutter	each, $1.50
B.	Segment of gear	" 1.25
C.	Lever	" 1.90
D.	Cutter segment of gear	" 2.00
E.	Body of cutter	" 2.00
F.	Die screw	" .50
G.	Lever Screw	" .50

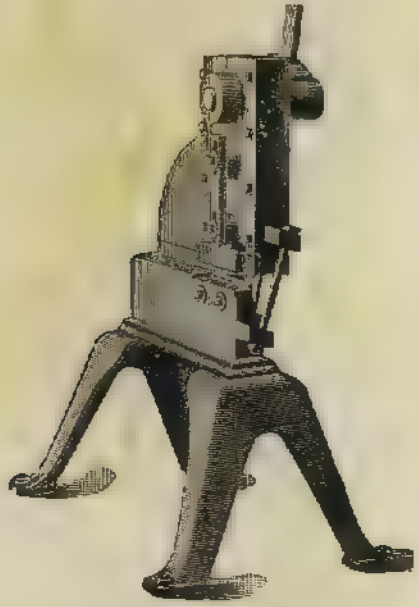
TAFT'S COMBINED PUNCH AND SHEAR, GEARED.

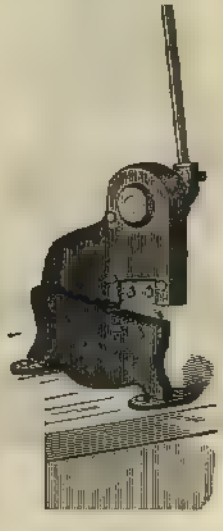
Made in 6 sizes. Punching or shearing plate iron from ¼ to $\frac{9}{16}$ of an inch in thickness. All sizes have the automatic start and stop motion and are furnished with the tie bolt. We make these machines to be operated by hand. Prices 33⅓ per cent. less than for geared machines. No dies or punches are furnished with machines. Each machine requires two boxes.



No of Machine	43	44	45	46	47	48
Each	$195	280	400	540	670	825
Weight about, lbs.	550	1150	1450	1900	2200	2500
Capacity in Plate Iron — Diam of hole, wil. punch, in	¼	$\frac{5}{16}$	⅜	$\frac{7}{16}$	½	$\frac{9}{16}$
Capacity in Plate Iron — Thickness will punch or shear, in	¼	$\frac{5}{16}$	⅜	$\frac{7}{16}$	½	$\frac{9}{16}$
Greatest dist. wil punch from edge of sheet	2	2¼	3	3	3½	3½
Movement of slide bar, in.	⅞	1	1	1¼	1¼	1¼
Dia. socket in slide bar, in	⅝	¾	¾	⅞	⅞	⅞
Dia. socket in die holder, in	1½	1¾	1¾	2	2	2
Diam. hole in die bed, in.	1¾	2	2½	2½	2½	2½
Length of shear blades, in.	5½	7½	8½	9½	9½	10
Diam. of fly wheel, in.	17	21	25	28	30	30
Width of fly wheel, in	3	3½	4	4	5	5
Diam T. and L. pulleys, in.	12	16	18	20	22	24
W'th of T. and L. pulleys, in.	3	3	3½	3½	4	4
Rev. per minute, about	375	350	300	250	200	180
Ratio of gearing	5:1	5:1	5:1	5:1	5:1	6:1
Net extra for boxing	$4.00	5.00	5.00	6.00	6.00	6.00

TAFT'S HAND SHEARS.



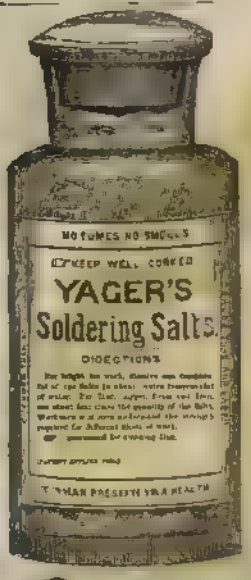


No 1

Made in 8 sizes. Cutting stock from ⅛ to $\frac{5}{16}$ of an inch in thickness. The lever works from either front or back side. Nos. 6, 7 and 8 have two levers.

Always have the hold down bear on the stock when cutting or slitting. Always use the tie bolt, when cutting off.

No. of Shear	1	2	3	4	5	6	7	8
Each	$22.50	42.00	67.50	95.00	130	187	250	330
Weight about, lbs.	50	200	325	500	700	1000	1200	1500
Will shear or split plate iron, in.	⅜	$\frac{7}{16}$	½	$\frac{5}{8}$	⅝	$\frac{7}{16}$	½	$\frac{9}{16}$
Length of blades, in.	3	4	5½	7½	8½	9½	9½	10
Length of levers, ft.	1½	2¾	4	5½	6	6½	6½	6½
Net extra for boxing	$ 1.00	2.50	2.50	3.00	3.00	4.00	4.00	4.00



YAGER'S SOLDERING SALTS.

Used in place of soldering fluid, and as it contains no free acid, can be employed when the ordinary fluid would cause corrosion and destruction of finished work.

This article was first placed upon the market by a practical mechanic, and after several years of private use, so well was he satisfied of its merits that he decided to place it on the market, since which the Salts have received deserved success.

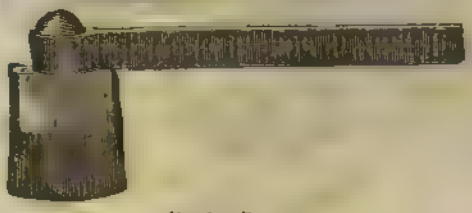
It is invaluable in tinning iron, copper, etc., and cleaning zinc.

Unlike acid it emits no fumes or smells which, besides being offensive affect the unfortunate workman forced to use it.

Price, ½ lb. Bottles $0 35
" 1 lb. " 60

SOLDERING COPPERS.

Nos.	1	1½	2	3	4	5	6
Weight, each	½	¾	1	1¼	2	3	4
Each	$0 25	.25	.30	.45	.60	.90	$1.20



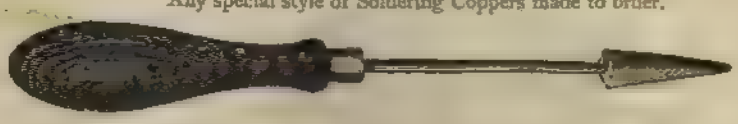
Hatchet Pattern

Flat Pattern.

Flat, 3, 4, 5, 6, 7, 8 lbs. per pair, ... per lb., $0.30
Hatchet, 4, 5, 6, 7, 8, 9, 10 lbs. per pair . . " .30
Roofing, 11 lbs., with handles and shield, per pair . . . . . " .30

Any special style of Soldering Coppers made to order.

JEWELERS' SOLDERING COPPERS.



Nos.	1	2	3	4	5
Length, inches	14	9	9	8	8
Weight, ounces	5½	3	1¾	1	⅞
Each	$0.35	.30	.25	.20	.15

TURN PINS.

Best Quality, Nos 1, 2, 3 each, $0.25

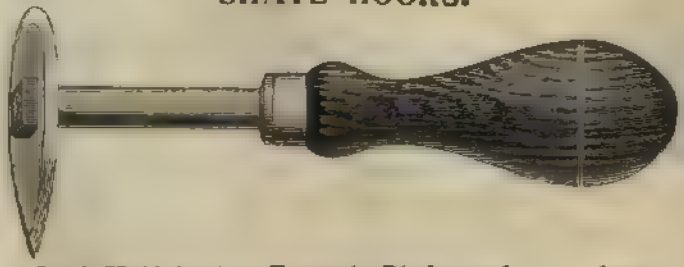
DRIFT PLUGS.

Length, inches 1, 1¼, 1½, 2,
Each, $0.20

TAP BORERS.

N. Y. Pattern, Extra Heavy Shank, each $0.42

SHAVE HOOKS.



Oval, Half Oval or Triangle Blade, each $0 30

Phila. Pattern, Straight Shank 12

THE GEM SOLDERING CASKETS.

No. 1.

Contains soldering iron that will fit any ordinary gas-burner and will heat in two or three minutes, scraper, large bar of solder, box of soldering salts, with full directions in box.

Each..... $1.00

No. 2.

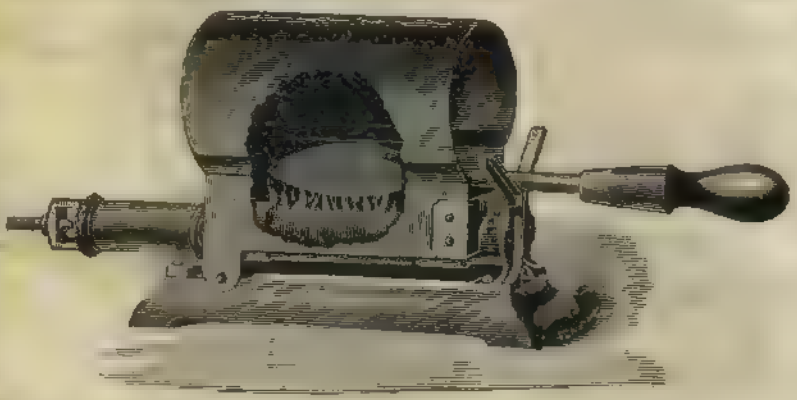
Soldering iron and scraper, as seen in the cut. Put up in wooden boxes. Not adapted to gas burners.

Per set..... $0.50 Soldering fluid, per bottle..... $0.10

SOLDERING IRON HEATERS.

This Heater is extensively used by tinsmiths, plumbers, electrotypers, etc. It is particularly useful to plumbers, dispensing with the annoyance and trouble of carrying furnace and coals in doing work outside of the shop. It can be carried in the kit, and attached to any gas burner in the house where they may be employed. The heater is wide enough to accommodate two ordinary size soldering bits, which can be used alternately.

With dome for economizing heat..... $1.75



GAS SOLDERING FURNACES.

Believing in the great superiority of gas for heating Soldering irons, we made a series of experiments in this direction, to secure the greatest efficiency with the least practical consumption of gas. Their extensive use has more than realized our expectations, and we confidently recommend them as being the best article for the purpose ever devised, combining as they do neatness, rapidity of work and economy. These furnaces are made in two sizes.

No. 1, For one iron..... $4.00

No. 2, For two irons..... 5.00

SOLDER POTS.

Diam. on top, inches	5	6	8	9	10½	13
Each.....	$0.50	.65	1.10	1.30	1.75	3.50

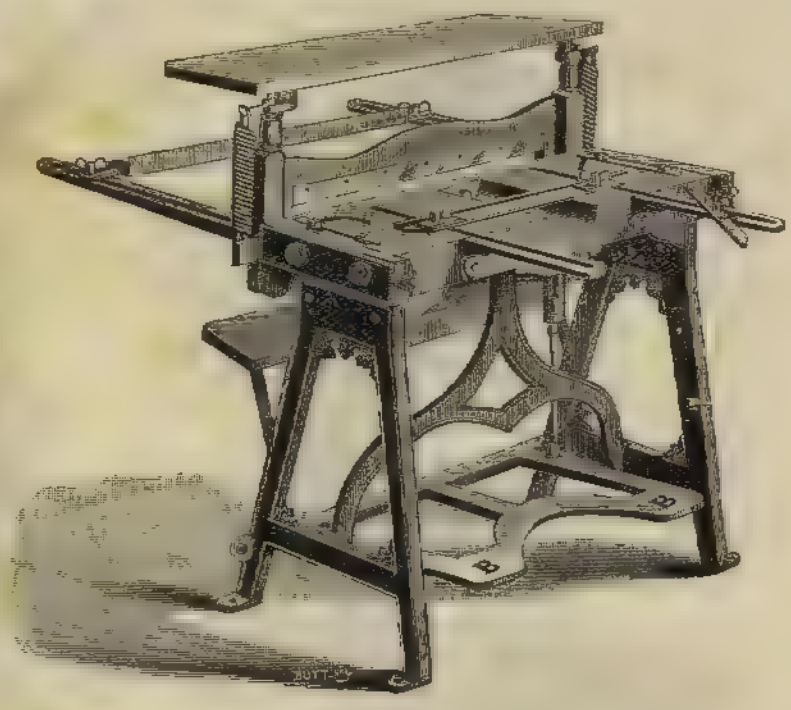
SOLDERING FLUID.

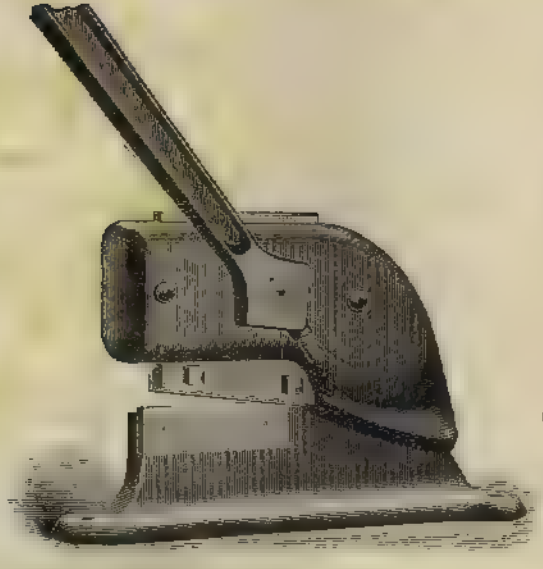
Per bottle..... 10c., $0.15

NEW IMPROVED SQUARING SHEARS.

This cut represents the New Improved Squaring Shear. It has a shelf on top of the arms to hold the metal before cutting, also a shelf below the blades to catch the metal after cutting. It also has a brace in the center to prevent the swaying motion which all other square shears are subject to. It is the easiest, smoothest working and heaviest Shear in the market, weighing (crated) 440 lbs., and is sold at price of the ordinary 30 inch square shears. Other sizes and prices furnished on application.

Each..... $50.00





Montgomery & Co. are prepared to estimate on complete outfits for Tinsmiths.

THE "FEDERAL" BENCH SHEAR.

The "Federal" shear is one of the best in the market. It is strong, compact and well-made, of good design and will cut sheets or bars not exceeding $\frac{5}{16}$ inch thick.

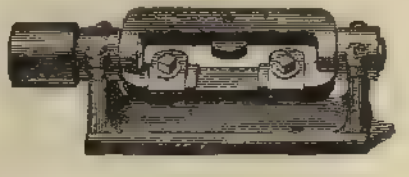
Stands only 8 inches high and weighs 30 lbs.

Price..... $15.00 each.

THE "FEDERAL" WIRE STRAIGHTENER.

A simple and effective machine which has met with great favor. Will straighten Nos. 3 to 20.

Price each..... $12.00

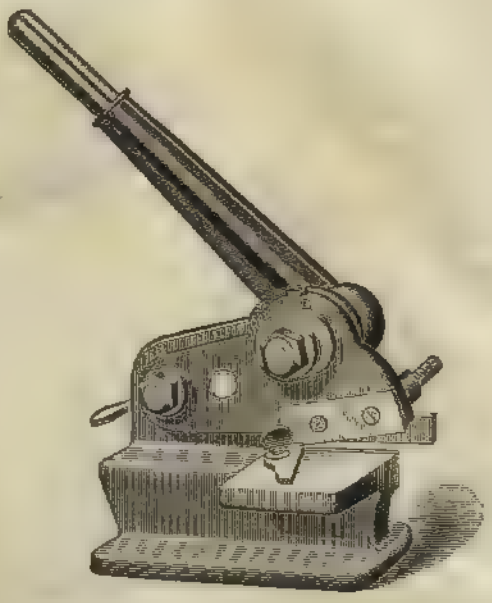


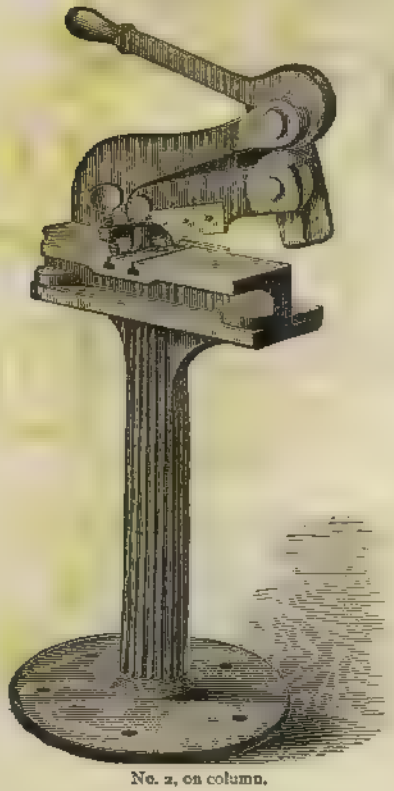
Montgomery & Co. are prepared to quote prices and send circulars on larger and more complicated wire straightening machines.

JEWELERS' BENCH SHEARS.

A good bench shear has long been needed, and in the introduction of this one we are confident that we have supplied that want with a tool that we can fully guarantee not only to be as good but superior to any in the market. It has a capacity of cutting any length or width and $\frac{1}{16}$ inch in thickness. A prominent point is in the adjustment of the shear arm by means of the eccentric at the back; with this arrangement a greater or less degree of angle can be quickly given to the blades, so that in cutting thin stock it will not curl the metal. The length of blades is three inches. It has a gauge on the table for cutting angles, and one on the arm for gauging the lengths of rings, etc., with the standard divisions marked on the bar; also a clamp for holding down the metal.

No. 1. Weight 20 lbs.....each, $15.00





No. 2, on column.

JEWELERS' LEVER SHEARS.

No. 2.

Mounted on column. Cuts sheet metal $\frac{3}{16}$ inch thick and thinner. Cuts rods $\frac{3}{8}$ inch in diameter and thinner.

Each..... $65.00

No. 1.

For bench use, without column. Cuts sheet metal $\frac{3}{8}$ inch thick and thinner. Cuts rods $\frac{1}{4}$ inch in diameter and thinner.

Each $20.00

These shears have holding-down clamp to keep the metal from springing out of shape while being cut.

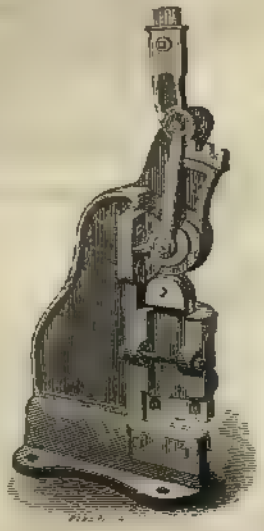


PLATE SHEARS.

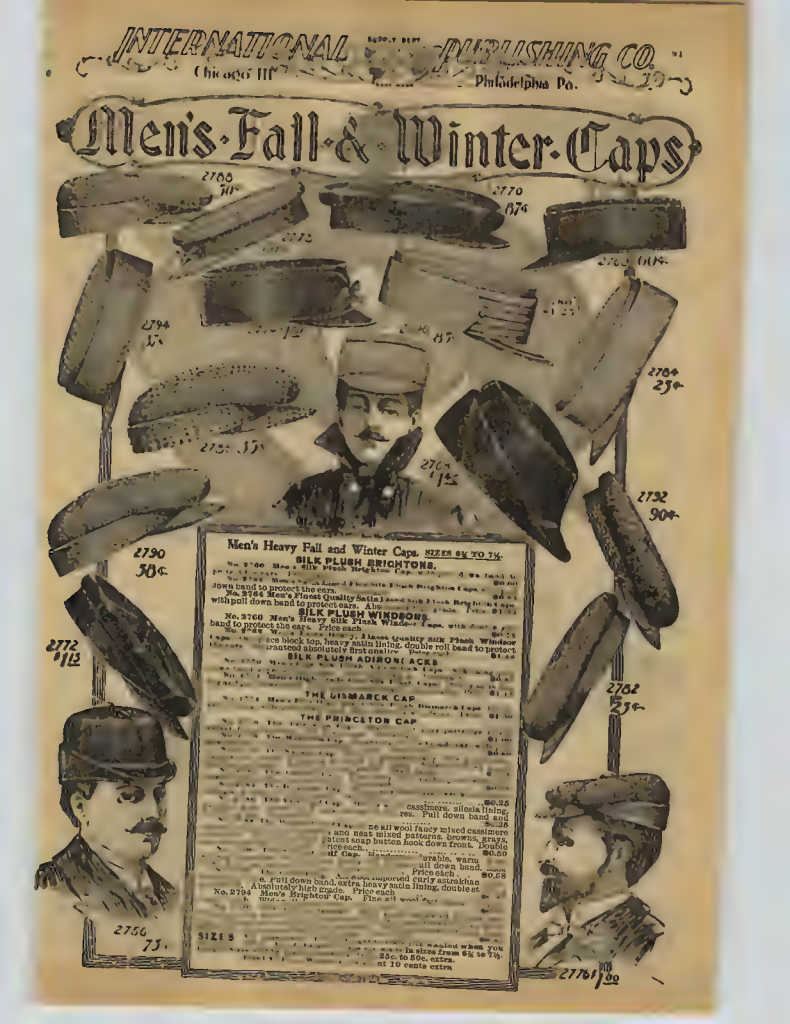
For cutting through Plate Iron of any Width.

Lever Works at the Front.

No. 1	will cut	$\frac{3}{16}$	plate iron,	weight	115	lbs.....	each,	$40.00
" 2	"	$\frac{1}{4}$	"	"	210	"	"	50.00
" 3	"	$\frac{3}{16}$	"	"	275	"	"	66.00
" 4	"	$\frac{3}{8}$	"	"	475	"	"	90.00

We make a specialty of dies and stamps for stamping all kinds of tools, files, table cutlery, drills, edge tools, levels, etc. Prices for regular work will be found in this book. However, for fancy designs, the prices all depend upon the size, style, etc. Prices upon application.

INTERNATIONAL SUPPLY BUR. PUBLISHING CO.
Chicago, Ill. Philadelphia Pa.

Men's Fall & Winter Caps

Men's Heavy Fall and Winter Caps. SIZES 6¾ TO 7¾.

SILK PLUSH BRIGHTONS.

No. 2766 Men's Silk Plush Brighton Cap.
No. 2768 Men's
down band to protect the ears.
No. 2764 Men's Finest Quality Satin
with pull down band to protect ears. Also
SILK PLUSH WINDSORS.
No. 2760 Men's Heavy Silk Plush Windsor
band to protect the ears. Price each
No. 2762 Men's Finest Quality Silk Plush Windsor
caps, with
piece block top, heavy satin lining, double roll band to protect
ears.
guaranteed absolutely first class in
SILK PLUSH ADIRONDACKS

THE LISMARCK CAP

THE PRINCETON CAP

$0.35
cassimere, silesia lining,
ear. Pull down band and
$0.38
ne all wool fancy mixed cassimere
s and neat mixed patterns, browns, grays,
patent snap button hook down front. Double
ric each.
$0.50
all Cap.
durable, warm
ull down band.
Price each
$0.58
e, roll down band, extra heavy imported curly astrakhan.
Absolutely high grade. Price each
No. 2784 Men's Brighton Cap. Fine all wool
$0.98

SIZES

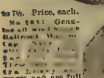
mailed when you
in sizes from 6¾ to 7¾.
25c. to 50c. extra.
at 10 cents extra

INTERNATIONAL SUPPLY DEPT PUBLISHING CO.
Chicago Ill. Philadelphia Pa.

Men's Windsor Caps.
65c FOR A 50c CAP.

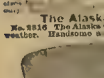
No. 8203 Men's Seamless Scotch Wool Windsor Caps.

to 7¼. Price, each.



No. 8251 Genuine all wool Scotch Knitted Wool Caps, very warm, and are full seamless throughout. They will wear for years. Sizes 6¾ to 7¼. Price each $0.42

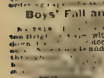
The Alaska Cap, 90c.



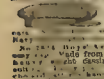
No. 8216 The Alaska Cap, weather. Handsome and

Boys' Fall and Winter Caps.

No. 8218 Boys' Fine Kersey with pull down flaps to cover the ears and tied under the chin. Made from fine Kersey cloth, lined throughout with fine Satin and Farmer Satin. Well made throughout. Sizes 6¾ to 7. Price each $0.42



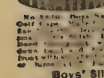
No. 8214 Boys' Kersey cloth cap, made from fine Kersey cloth, lined throughout with fine Satin and Farmer Satin. Well made throughout. Sizes 6¾ to 7. Price each $0.42



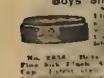
No. 8215 Boys' Fine Kersey and Cheviot cloth cap, made from fine Kersey cloth and Cheviot cloth, lined throughout with fine Satin and Farmer Satin. Well made throughout. Sizes 6¾ to 7. Price each $0.42

No. 8209 Boys' Fine Kersey and Oxford gray mixed cap, made from fine Kersey and Oxford gray mixed cloth, lined throughout with fine Satin and Farmer Satin. Well made throughout. Sizes 6¾ to 7. Price each $0.42

Boys' Silk Plush Caps.

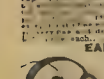


No. 8234 Boys' Fine Black Silk Plush Cap. Sizes 6¾ to 7. Price each $0.42



No. 8235 Boys' Fine Black Silk Plush Cap. Sizes 6¾ to 7. Price each $0.42

EAR MUFFS.



No. 8238 Fatent Adjustable Polar Ear Muffs. Made from fine black velvet with adjustable spring. Soft fleece lining. Price per pair .$0.20

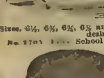
Per dozen pairs $1.80

No. 8240 Fine Plain Black Velvet Ear Muffs, with elastic cord. Price per pair $0.10

Per dozen pairs 1.00

Boys' Hats.

Sizes, 6¾, 6¾, 6¾, 6¾ and 7. Always state size desired.



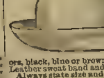
No. 8703 Boys' School Hats, made from staple wool felt, turban style, with neat band and leather sweat. Sizes, 6¾ to 7. Each $0.35

No. 27 "Boys' Saxony Wool" Hats, medium shaped crown and narrow stitched brim. Colors, black, blue or brown. Always state size and color wanted. These hats will give excellent service. They are fine in finish and very durable. Made with ribbon band and leather sweat. Price each $0.48

Our School Special.

No. 8708 The Best Boys' School Hat ever made. We have chosen that made up from fine heavy blue wool worsted suitings. Made in Turban style with bound stitched brim and 5-piece top. Sizes, 6¾ to 7. Price each $0.48

Boys' Crushers.



No. 8709 Boys' and Youth's fine Saxony Wool Crushers. Curling brim and round crown, made from extra selected stock. Colors, black, blue or brown. Finely made and finished. Leather sweat band and raw edge. Each $0.30

Always state size and colors desired.

No. 8710 Boys' and Youth's Fine Soft Fur Felt Crushers. Raw edge, with curling brim and round crown. Fine satin finish, narrow ribbon band and fine leather sweat band. Sizes, 6¾ to 7 only. Colors, black, brown or gun. Price each $0.24

Always state size and color desired.

Boys' Fedora Hats.

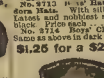
No. 8711 Boys' Latest Style Fedora Hats. Made from fine Saxony wool, with band and binding and leather sweat band. Sizes, 6¾ to 7. Colors, black, brown or gun. Price each $0.41

No. 8219 Boys' Latest Style Saxony Wool Fedora Hats. Same as shown in dark brown. Each $0.47

No. 8712 Boys' Handsome Clear Fur Felt Fedora Hats. With silk ribbon band and binding. Latest and nobbiest style. Sizes, 6¾ to 7. Colors, black, brown or gun. Price each $0.95

No. 8714 Boys' Clear Fur Felt Fedora Hats. Same as shown in dark brown. Price each $1.10

$1.25 for a $2.00 Boys' Fedora.



No. 8715 The Handsomest Boys' Hat made. Very fine Fedora style, with heavy satin lining, with silk ribbon band and binding and Sue very dressy.

6¾ to 7 only. Color black. Made from fine felt. Price each $1.25

No. 8716 Same hat as above, but in shade of seal or golden brown. Price each $1.25

THE SIZE OF A HAT

is very important, therefore be sure you make out your order don't forget to state just what size you want. We can then fill your order promptly and to your entire satisfaction.

Winter Gloves and Mittens

For Men, Women and Children. You cannot afford to pay your local dealer 75 cts. for a pair of gloves that we can sell you for 50 cts. Consult our quotations in glove department. Save money on gloves this season

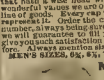
MEN'S FALL CAPS.

Light Weight for Early Fall Wear

We that hath no Head needs no Cap. But he that hath a wise head will readily appreciate the wonderful values we are offering this season in this line of goods. Every cap we quote is exactly as we represent it. Order the cap you wish by catalogue number, always being sure to state size wanted and we will guarantee to fill your order correctly and give you such satisfaction as you have never had before. Always mention size wanted.

MEN'S SIZES, 6¾, 6⅞, 7, 7⅛, 7¼, 7⅜ and 7½.

Men's Fancy Golf Caps at 21 Cts.



No. 8718 Men's Fancy Mixed Cassimere Golf Caps, extra well made and plenty of room. A good assorted dark and medium colors. This is positively a great bargain and one that any man will be appreciated by every person ordering one of these caps. We have them made in all sizes from 6¾ to 7½. Price each $0.21

Per dozen 2.30

25c for 50c Broadcloth Caps

No. 8719 One of our specialty Cassimere Caps, in 5-piece top

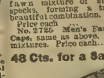
Navy Blue Broadcloth Sizes, 6¾ to 7½. Price each $2.70

Fancy Corduroy Caps.

No. 8724 Men's Fancy Mixed Corduroy Golf Caps. Extra fine quality, with leather sweat bands and beautiful silk linings. Each handsome effect in a variety of fawn shades, forming a truly splendid combination. Sizes, 6¾ to 7½. Price each $0.48

No. 8725 Men's Fancy Mixed Corduroy Golf Caps, same as above, in handsome golden brown mixtures. Price each $0.48

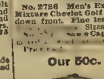
48 Cts. for a Satin Lined Golf Cap.



No. 8726 Men's Extra Quality All Wool Gray Mixture Cheviot Golf Caps. Six-piece top and full peak, full satin lined. Fine leather sweat band. All sizes, 6¾ to 7½. Price each $0.48

Same Cap as above in handsome brown mixture. Full satin lined $0.48

Our 50c. Paddock Cap.

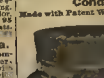


No. 8728 Men's New Paddock Cap, made from fancy gray mixed English Cheviot, fine leather sweat band and satin lining. One of the handsomest caps made this season. Sizes 6¾ to 7½. Price each $0.48

No. 8730 Men's Paddock Cap, same as above but made from fine navy blue Serge, with heavy satin lining $0.36

Conductor Caps.

Made with Patent Wire Frame. Never get out of shape.



No. 8740 Conductors' Extra Fine Navy Blue Broadcloth Caps, with patented wire frame and fine leather sweat band. These are the same quality caps for which genuine news agents, trainmen and others who are usually obliged to pay from $2.50 to $3.00 each.

We guarantee these caps to be a perfect fit, and to hold their shape. This is a plain cap without lettering. Lettered caps will cost 10c per letter extra.

POSTAGE On plain caps without lettering, add 10 cts. for postage.

ON CONDUCTORS' CAPS, WHEN SENT BY MAIL, 20 CTS. EXTRA.

HAT DEPARTMENT.

The Latest Shapes and Shades at Factory Prices. New Fresh Goods.

HOW TO MEASURE FOR A HAT.

Head size.	Inches around head.	Head size.	Inches around head.	Head size.	Inches around head.
5¾	17½	7	21¾	8¼	25¾
6	18	7¼	22½	8½	26½
6¼	18¾	7½	23¼	8¾	27
6½	19½	7¾	24	9	27¾
6¾	20¼	8	24¾	9¼	28½
6⅞	20¾				

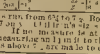
Men's sizes run from 6¾ to 7 3. Boys' sizes run from 6¾ to 6¾ only. If no measure is at hand use a string for measuring and put it to the size in Men's sizes above 7 are made to order only.

FULL DRESS SILK HATS.

No 1. Silk Hat. Men's fine black silk Each hats, very latest shape..... $3 65

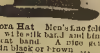
No 2 Silk Hat Extra fine black silk, with superior full dress finish 4 98

NEW FEDORA HATS.



No 3. Fedora Hat Men's fine felt soft Each
Fedora hat with silk band and binding, leather sweat band. A nice assorted dressy hat in black or brown..... 63

No 4 Fedora Hat Superfine quality soft fur felt with wide silk ribbon band and binding, satin lined, leather sweat band, medium shape, black coffee-brown, slate or seal brown shades An excellent hat usually sold at $2.00; our price ..... .93

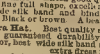


No 5 Fedora Hat A very fine quality of soft fur felt in this popular shape with extra quality of fine wide silk band and binding. Black, brown or gray. A popular hat at a popular price..... 1 18

No 6 Fedora Hat. Extra good quality fur felt, fine full shape, excellent trimmings. Wide silk band and binding. Black or brown A beauty 1 38

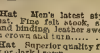
No 7. Fedora Hat. Best quality soft fur felt, of guaranteed durability in wear and color, best wide silk band and binding, extra dress finish. No better hat made at any price... 2 35

MEN'S STIFF DERBY HATS



No. 8. Stiff Hat. Men's latest style Each black Derby hat. Fine felt stock, silk ribbon band and binding leather sweat band, medium crown and trim..... 98

No 9 . Stiff Hat Superior quality felt stock in black or dark brown 1 38



No 10. Stiff Hat Black Derby, fur felt, silk ribbon band and binding; very popular shape 1 50

No 11 Stiff Hat Extra fine quality felt stock in black or dark brown 1 78

No 12 Stiff Hat Best quality felt Each stock, latest shape, black, dark brown or seal brown 2.18

No 13 Stiff Hat Superior quality fur felt, with fine silk lining and silk band. Black or brown. 2.38

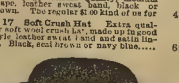
No. 14 Stiff Hat Fine dress stiff fur hat, Knox or Dunlap's latest shape. Made of best quality stock and finished in the highest style. A hat you usually pay $5.00 for; our price..... 2.48

SOFT CRUSH HATS.

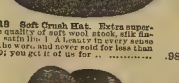
No. 15. Soft Crush Hat. Good soft Each wool crush hat of medium shape, black or brown ..... .33

No 16 Soft Crush Hat. Fine soft wool crush hat, excellent quality, medium shape, leather sweat band, black or brown. Too regular $1.00 kind for us 48

No 17 Soft Crush Hat Extra quality soft wool crush hat, made up in good style leather sweat band and satin lined. Black, seal brown or navy blue..... 69



No. 18 Soft Crush Hat. Extra superfine quality of soft wool stock, silk finish satin lined A beauty in every sense of the word, and never sold for less than $2.00; you get it of us for ..... .98



No. 19 Crush Hat Derby shape crusher Made of selected fine felt In black or tan color 1 12

MEN'S SOFT FUR HATS.

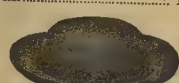
No. 20. Soft Fur Hat. Excellent qual- Each ity soft fur, cord band, raw edge, medium shape black or navy blue. .. $ .87

No. 21. Soft Fur Hat. Superior grade of soft fur, narrow ribbon band raw edge, same style as No. 20, better quality. In black or navy blue 1 08

No 22. Soft Fur Hat. Extra quality fine soft fur fine finish narrow ribbon band, raw edge. In black, dark brown or slate color 1 26

No. 23. Young Men's Soft Fur Hat. Made of fine fur felt, cord band, raw edge. Very neat and dressy. Square crown. Black or navy blue..... .85

No. 24. Young Men's Soft Fur Hat. Superior quality fine fur felt, narrow silk ribbon, raw edge. Black or navy blue..... 1 12

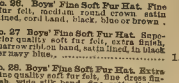


No. 25. Young Men's Extra Fine Soft Fur Hat. Extra fine quality soft fur felt, extra fine finish, wide silk band, satin lined, very swell In black only... 1.37

No. 26. Boys' Fine Soft Fur Hat. Fine fur felt, medium round crown satin lined, cord band. Black, blue or brown . .98

No. 27 Boys' Fine Soft Fur Hat. Superior quality soft fur felt, extra finish, narrow ribbon band, satin lined, in black or navy blue, ... 1.23

No. 28. Boys' Fine Soft Fur Hat. Extra fine quality soft fur felt, fine dress finish, wide silk band, fine satin lined, very dressy; in black only..... 1 62



No. 29 Boys' Turban Hat. Fine wool tartan, ribbon band, bound edge, round crown, black, blue or brown..... .28

No. 30. Boys' Turban Hat. Superior quality fine Saxony wool, satin ribbon band and binding. Black or brown..... .42

Cash is the great leveler of prices. You ought to buy cheaper for cash than your neighbor does on credit, but ordinarily you do not. If your neighbor fails to pay, your cash helps to even it it up. Not so here.

Here is a Line of Hats at Prices that Cannot be Duplicated, Quality of Goods Considered.

INTERNATIONAL PUBLISHING CO. SUPPLY DEPT. TRADE MARK
Chicago Ill. Philadelphia Pa.

Men's Extra Fine Buckskin Gloves.

No. 2441 Men's Extra Fine Soft-dressed Genuine Plymouth Buckskin Gloves. Medium weight. Fine welt stitched backs, set-in thumbs and patent front slash. Lustrous Genuine table cut, soft and pliable and warranted in every way. Price, per pair..$ 0.98
Per doz..10.74

No. 2442 Men's Plymouth Buckskin Gloves. Same as above but made in heavy weight.
Price, per pair..$ 1.12
Per doz..12.00

Our $1.00 Indian Tanned Buckskin Gloves.

The Best Dollar's worth of Gloves.

No. 2443. No. 2441.

Men's Genuine Unlined Indian Tanned Buckskin Gloves. Heavy weight with welt stitched backs and patent buck snap buttons. Smooth, clear prime selected stock. You can't beat it anywhere on earth. Made under our own special directions and warranted to give the very best of satisfaction

Price, per pair..$ 1.00
Per doz..10.80

Unlined Fire Proof Gloves.

Unexcelled for Wear and Proof against Fire, Steam and Water.

No. 2445 Men's Unlined Asbestos Tanned Fire and Waterproof Glove. Light gray color, heavy grain leather, soft, smooth kid finish, stitched backs and patent buck cord and hook fastener.
Price, per pair..$0.96
Per doz..9.48

No. 2446 Genuine Heather Water and steam proof cotton tan with stitched backs and patents cord and hook fastener. Sturdy make and extra well sewed, unlined and heavy weight. Price, per pair..$0.86 No. 2446.

The Asbestol Cordovan Horse-Hide Gloves.

The Best Fire-proof Glove in the World.

No. 2447 Men's Asbestol Cordovan Horse-hide Gloves. Specially manufactured for us and guaranteed to be soft and pliable and to give protection against fire, steam, boiling water and cold water. Especially designed for railroad work and mining, as well as fanning, driving and all kinds of work requiring superior working qualities. Sewed throughout with waxed thread, stitched backs, banded wrists and patent cord and snap fasteners. This is the only genuine Asbestol cordovan horse-hide fire-proof glove in the world. Every pair warranted.
Price, per pair..$0.86 Per doz..$9.10

Small Size Gloves.

For Youths and Men with small Hands

No. 2451 California White Napa Tanned Unlined Gloves. For youths and men with small hands. Heavy stitched backs sewed with soft patented cord and 3 fasteners. Price, per pair..$0.42

No. 2452 Asbestos Tanned Fire-Proof Gloves. Unlined, with corded backs, banded wrists and patent buck string fastener. Strong and tough.
Price, per pair..$0.50

No. 2453 Olive Colored Driving Gloves, for youths and men with small hands. Heavy goats, stitched, welted backs, banded wrists and patent cord and hook fastener. An excellent glove in every way.
Price, per pair..$0.50

No. 2454 Genuine Indian Tanned Buckskin Gloves. Fine oil tan, stitched backs, banded wrists and Perkins's patent lock fasteners and 4 rows throughout with waxed thread, every pair stamped with warranted genuine. Small and medium sizes for youths and men with small hands. Price, per pair..$0.88

Men's Unlined Mittens.

FOR CHOPPERS, HEDGE CUTTERS, LUMBERMEN, ETC.

No. 2455. Men's Heavy Wat-proof Oil Tanned Drab Leather Chopper's Mitts. Large, full size mitts from clear, selected stock, and sewed with waxed thread. Welted seams and riveted thumbs.
Price, per pair..$0.47
Per doz..5.10

No. 2457. Unlined Horseshide Mitten. Made throughout from splendid quality of oil finished horseshide leather, welted and wax-thread sewed, with cord loop fastenings; made especially to wear over a woolen mitten for wood chopping, etc.
Price, per pair..$0.75
Per dozen..8.00

No. 2458. Men's Fitted Oil-ity Warranted All Calf Skin Unlined Chopper's Mitts, with welt seams and buck strip fastener. Sewed with waxed thread. The wearing qualities of these calf skin mittens are unexcelled.
Price, per pair..$0.75
Per dozen..8.10

No. 2459. Extra Special, Heavy and Thick Plymouth Buckskin Chopper's Mittens. Heavy welt seams and riveted thumbs. Sewed with waxed thread and warranted real buckskin.
Price, per pair..$0.94
Per dozen..10.72

No. 2458 Genuine Buck Skin Mitten. Sewed with waxed thread.

No. 2459 Genuine Buck Skin Mitten. Sewed with waxed thread.

Men's Unlined Gauntlet Gloves.

Genuine Goat Skin Gloves.

No. 2466 Men's Unlined Gauntlet Glove. Genuine napa tanned goatskin. Heavy grain, stitched backs, 4-inch gauntlet wrists, welt seams and made up in first-class style. Fine glove for driving. They are by far the best, cheap gauntlet glove ever made. Price, per pair..$0.36
Per dozen..3.88

The Best Railroad Gloves in the World.

No. 2462. The Phoenix Fire Proof Railroad Gauntlet Gloves. Real asbestos tan, soft and smooth. Heavy weight and very desirable for railroad men. Stitched backs and welt seams, 3-inch gauntlet wrists that lace up the outer side, can be laced and fastened over the sleeve of shirt or coat. Patented fastener. These are exceptionally desirable gloves and are something entirely new. They are sewed throughout with waxed thread and are warranted to give good service.
Price, per pair..$0.75
Per doz..8.10

Fire and Steam Proof Gauntlets.

No. 2465 Genuine Fire Proof Asbestol cordovan horsehide real gauntlet gloves. Special tannage. Made and sold under registered trade mark, warranted to remain soft and pliable in any climate and to be proof against heat, steam, boiling water and cold water. Sewed with waxed thread sewed and welted, fancy gauntlet cuffs, with lace and reinforced thumbs, every pair stamped "Asbestol Cordovan Horsehide" and fully warranted by the makers. The greatest glove of the century.
Price, per pair..$0.90
Per doz..9.60

No. 2467. Men's Heavy Unlined Plymouth Buck skin Gauntlet Gloves. Soft and smooth, over-stitched backs and fancy stitched gauntlets. Thoroughly well made and warranted to give satisfactory service. Price, per pair..$1.05

DON'T FORGET

TO SEND THE STAMPS WHEN POSTAGE

GLOVES ARE TO BE SENT BY MAIL. SEND FROM 20 TO 30 CENTS EXTRA PER PAIR FOR

Cowboy's Gauntlets.

THE VERY BEST MADE.

No. 2468. Cowboy's Buckskin Gauntlet Gloves, made from prime selected jack buck, medium weight and unlined. Soft and smooth, made with wide gauntlet wrists. Heavily [illegible] embroidered silk gauntlets. One of the finest looking, as well as best wearing gloves ever made. A great favorite with cowboys, ranchmen and ranchmen. Also popular for horseback riding in all parts of the country.
Price, per pair..$ [illegible]

The Lone Star Gauntlet.

The Most Popular Glove Ever Manufactured.

No. 2469 Men's Lone Star Gauntlet Gloves, made from the finest quality table cut Plymouth buckskin. Light yellow color, soft and fine. Fine welt seams, three rows of heavy red embroidery on backs. Fancy embroidered gauntlets, with large point star embroidered on red leather, trimmed with buckskin fringe and finished in very best manner throughout.
Price per pair..$1.50

No. 2470 Silver Stars for decorating the above gloves, also for decorating hats, belts, etc. Per dozen..$0.50

Husking Pins and Gloves.

No. 2471 Husking Pin [illegible] point [illegible] band. Per pair..$0.05

No. 2472 Husking Pin [illegible] Per pair..$0.10

No. 2473 Husking Pin [illegible] Per pair..$0.19

No. 2473 Husking Glove. Made of best quality of tan leather and grain leather, soft and easy to the hands, specially tanned leather for the thumb. Price, per pair..$0.40

No. 2474. Men's Best quality Oil Tanned Calf Side Husking Gloves, riveted palms and patent. husking pin. Price, per pair..$0.75

Husking Mitten.

No. 2475. Made of Heavy Canvas and palmed with extra canvas, leather, special protection, special husking hand and special fastening hand to close, fastened with copper rivets, wrist strap and buckle.
1 pair, per pair..$0.24

Men's Fur Gloves and Mittens.

No. 2476 Men's Heavy Soft Brown Fur Gauntlet Mittens, with best jack lining, genuine fur and fine soft wool fleece lining; thoroughly reliable, warm and comfortable. They are full of oversize, good measure and good weight, fastened with copper rivets and buckle.
Price, per pair..$1.37

No. 2477 Men's Heavy Soft Brown Fur Gauntlet Gloves. Made up and trimmed in best possible manner. Finest quality heavy jack buck palms and heavy wool fleece lining. Guaranteed to give the best of satisfaction. Price per pair..$1.50

No. 2478 Men's Extra Quality Plaited Otter Fur Gauntlet Gloves. Light brown color, fine and very soft. Close thick fur and unexcelled for wear; finest jack buck palms, corduroy lined gauntlets and fur wool fleece lined fingers and thumbs. One of the handsomest and most serviceable gloves made. Price per pair..$3.00

you'll like them if you buy them. Extra well made throughout. Price per pair..$1.37

No. 2480 Men's Heavy Soft Brown Fur Gauntlet Gloves. Made up and trimmed in best possible manner. Finest quality heavy jack buck palms and heavy wool fleece lining. Guaranteed to give the best of satisfaction. Price per pair..$1.50

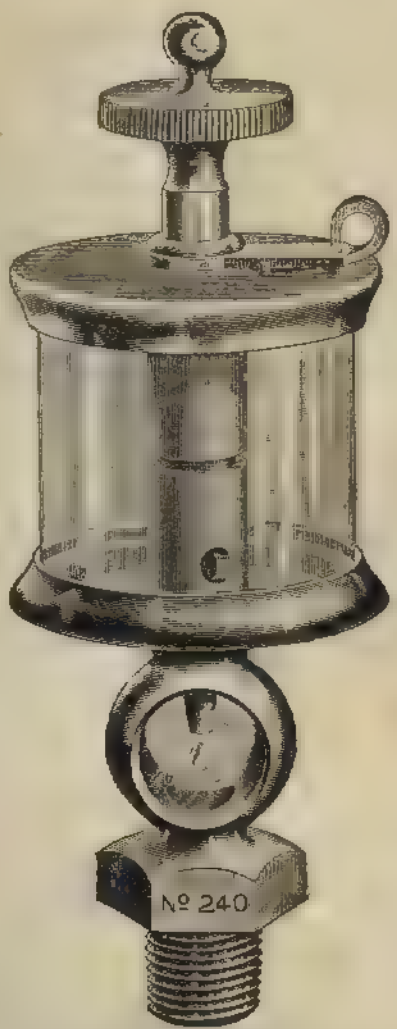
No. 2481 Men's Extra Quality Plaited Otter Fur Gauntlet Gloves. Light brown color, fine and very soft. Close thick fur and unexcelled for wear; finest jack buck palms, corduroy lined gauntlets and fur wool fleece lined fingers and thumbs. One of the handsomest and most serviceable gloves made. Price per pair..$3.00

BE SURE TO NAME SIZE IF GLOVES WANTED WHEN YOU ORDER. REMEMBER IT. DON'T FORGET IT. KEEP IT IN MIND. YOU WILL GET YOUR ORDER FILLED ALL THE QUICKER AND BETTER BY USING CARE WHEN YOU WRITE IT.

SIGHT FEED OIL CUPS.

Slide Top. Sight Feed Oilers.

No.	Capacity Ounces	Diameter of Glass Shell, Inches.	Size of Shank, Inches.	Price, Each, Brass Finish.	Price, Each, Nickeled.
238	½	1⅛	⅛	$1 55	$1 75
239	¾	1¼	⅛	1 85	2 10
240	1	1⅝	¼	2 20	2 50
241	1½	1¾	⅜	2 55	2 95
242	2¼	2	⅜	3 10	3 65
243	3⅜	2⅜	⅜	3 85	4 45
244	6	2¾	½	4 85	5 55
245	10	3⅛	½	5 85	6 75
246	Pint	3½	¾	7 50	8 50
247	Quart.	4⅛	¾	13 20	15 20



SLIDE TOP. SIGHT FEED OILER.

Oiler has a friction valve stem not influenced by vibration.

FLUSHING OILER.

QUICK STOP.

Sight Feed Flushing Oilers.

QUICK STOP.

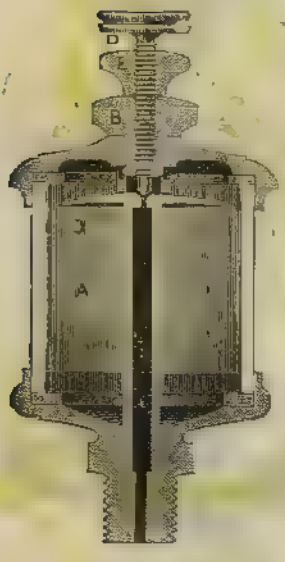
No.	Capacity, Ounces	Diameter of Glass Shell, Inches	Size of Shank Inches.	Price, Each, Brass Finish	Price, Each, Nickeled.
408	½	1⅝	⅜	$1 70	$1 90
409	¾	1¼	⅜	2 00	2 25
410	1	1⅝	¼	2 35	2 65
411	1½	1¾	⅜	2 70	3 10
412	2¼	2	⅜	3 20	3 75
413	3⅜	2⅜	⅜	4 00	4 60
414	6	2¾	½	5 00	5 70
415	10	3⅛	½	6 00	6 90
416	Pint.	3½	¾	7 65	8 65
417	Quart.	4⅛	¾	13 35	15 35

All Oilers threaded STANDARD GAS PIPE TAP, and will be shipped with shanks threaded as listed, unless otherwise specified in order.

GLASS OIL CUPS.

Patent Automatic Crank Pin Oil Cups.

As there are no moving parts to this Oiler, there is nothing to wear out.



Internal View.

This Cup can be emptied in five minutes, or can be so regulated as to feed for four weeks. On slow running engines, the oil being continually flowed over convex disc at top of Oiler, discharges into the oil tube and runs of its specific gravity to parts to be lubricated. As the speed of engine is increased, the oiler is lifted to the top of cup and maintains an *accumulated pressure* from *centrifugal force*, which force is increased or diminished in exact proportion to variation of speed of engine, oil ceasing entirely to flow when engine stops.

No.	Capacity, Ounces.	Diameter of Glass Shell, Inches.	Height of Glass Shell, Inches.	Size of Shank, Inches.	Price, Each, Brass Finish.	Price, Each, Nickeled.
1	¾	1¼	1⅞	¼	$1 60	$1 90
2	1	1⅜	1⅝	¼	2 30	2 70
2½	1½	1¾	1½	⅜	3 00	3 55
3	2¼	2	1¾	⅜	3 80	4 40
4	3⅜	2⅜	2⅛	⅜	4 80	5 50
5	6	2¾	2½	½	6 50	7 40
6	10	3⅓	2⅞	½	10 00	11 00

External View.

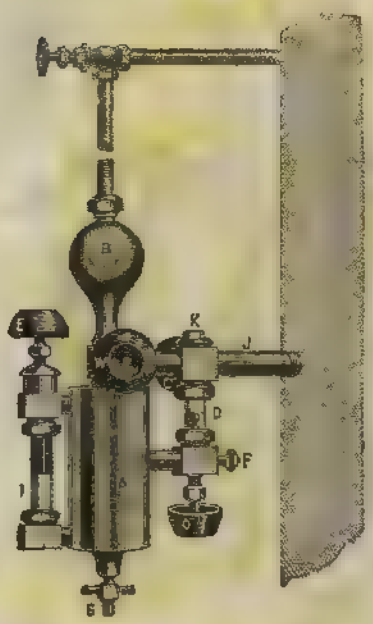
Slide Top Glass Oilers.

No.	Capacity of Ounces.	Diam. of Glass Shell, Inches.	Height of Glass Shell Inches.	Size of Shank, Inches.	Price, Each Brass Finish.	Price Each Nickeled.	Price of Extra Glasses, Per Doz., including Cork Washers.
X 0	..	1	⅞	⅛	$1 20	$1 35	$1 75
X 1	½	1⅜	1	¼	1 30	1 50	2 00
X 2	¾	1¼	1⅜	¼	1 35	1 60	2 20
X 3	1	1⅝	1⅜	⅜	1 70	2 00	2 70
X 4	1½	1¾	1½	⅜	2 15	2 60	3 10
X 5	2¼	2	1¾	⅜	2 65	3 20	3 50
X 6	3⅜	2⅜	2⅛	⅜	3 30	3 90	4 50
X 7	6	2¾	2½	½	4 00	4 70	7 00
X 8	10	3⅜	2⅞	½	5 35	6 25	9 00
X 9	Pint.	3½	4	¾	6 65	7 65	15 60
X 10	Quart.	4⅛	5⅛	¾	12 00	14 00	24 00

All Oilers threaded Standard Gas Pipe Tap, and will be shipped with shanks, threaded as listed, unless otherwise specified in order.

The most improved and simple Slide Top Glass Oil Cup in the market.

AUTOMATIC SIGHT-FEED LUBRICATORS.



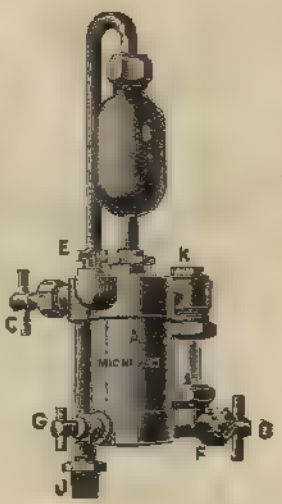
"CYCLONE" CUP.

"Cyclone" Lubricator.

	Brass Finished	Nickel Plated
Third Pint	$13 30	$14 30
Half "	15 00	16 00
Pint	20 00	21 35
One and One-Half Pint	23 00	24 70
Quart	26 75	28 35
Half Gallon	36 35	40 35
One Gallon	60 00	63 35

"Steam Chest" Lubricator.

¼ Pint—⅜ inch Shank	$6 00
⅓ " —⅜ " "	7 00
½ " —½ " "	8 00



"STEAM CHEST" CUP.
STEAM CHEST CONNECTION.

POINTS OF SUPERIORITY.

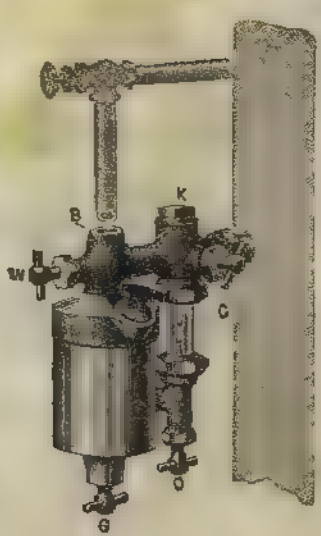
1st. Blow off cock F to empty and clean Sight-Feed Glass without draining oil reservoir.
2d. Air vent opened simultaneously with filler-plug, and to vent when emptying reservoir of water.
3d. Fibre seat drain cock easily repaired when leaky.

The "Jap" Cup.

The best cheap "up drop" sight-feed lubricator in the world.

Capacity, Pint	⅜	¼	½
Brass	$6 75	7 35	8 00
Nickel	7 40	8 00	9 00
Shank, inch	¼	¼	⅜

Capacity, Pint	½	1	1 Qt.
Brass	$10 00	13 50	20 00
Nickel	11 00	14 85	21 70
Shank, inch	⅜		



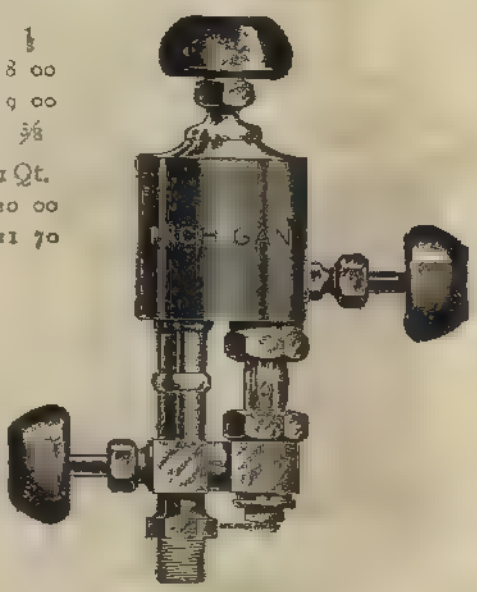
"JAP" CUP.

Gas, Naptha and Gasoline Engine Lubricator.

This Sight-Feed Lubricator will feed Oil to the Valves of Engines that do not employ steam as a motive power.

Made in one size only.

½ Pint—Shank, ⅜ inch,
Each, $8 00

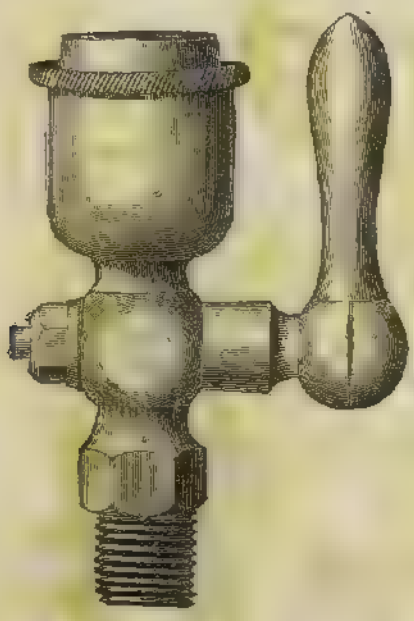


GAS, NAPTHA AND GASOLINE ENGINE LUBRICATOR.

Our Guarantee accompanies each Lubricator.

PLAIN OIL CUPS AND LUBRICATORS.

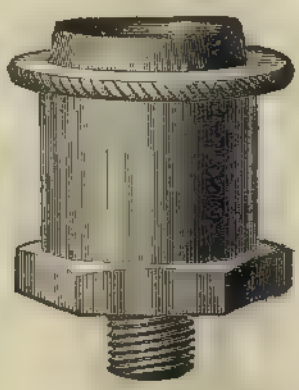
Brass Oil Cups.



LEVER HANDLE OIL CUP.

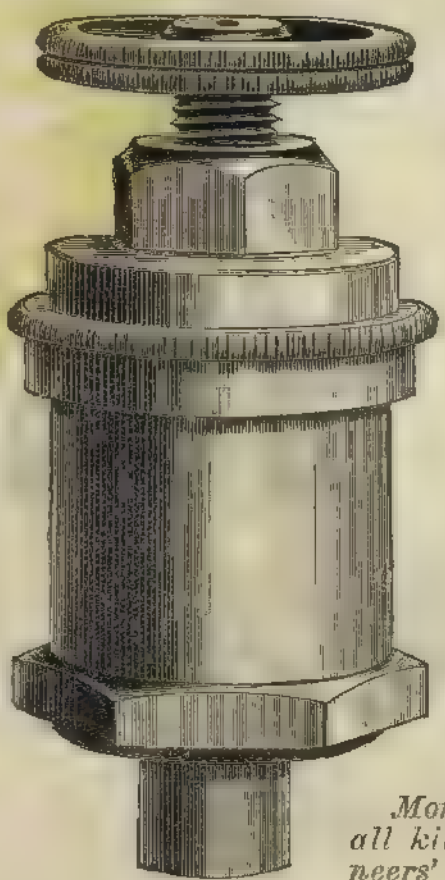
FANCY TOP OIL CUP.

PLAIN OIL CUP.



LOCOMOTIVE OIL CUP.

Diameter of Cup.....		⅜	¼	⅝	1	1⅛	1¼	1⅜	1½	2	2¼	2½	2¾	3
Locomotive Oil Cups	Each,	$0 30	$0 35	$0 40	$0 50	$0 60	$0 75	$1 00	$1 50	$2 00	$2 50	$3 00	$3 50	$4 00
Plain Oil Cups	"	25	30	35	40	50	60	90	1 25	1 75	2 25	2 75	3 50	4 50
T Handle Oil Cups	"	.....	.....	.....	1 00	.....	1 50	2 00	2 50	3 00	3 75	4 50	.....	6 00
Lever Handle Oil Cups.	"	.....	.....	.....	1 00	1 35	1 60	2 20	2 75	3 25	4 00	5 00	.....	6 50
Fancy Top Oil Cups	"	.....	.....	.....	75	1 00	1 25	1 50	2 00	3 00	.....	.....	.....	.....



GREASE CUP.

COMMON LUBRICATOR.

WOOD HANDLE

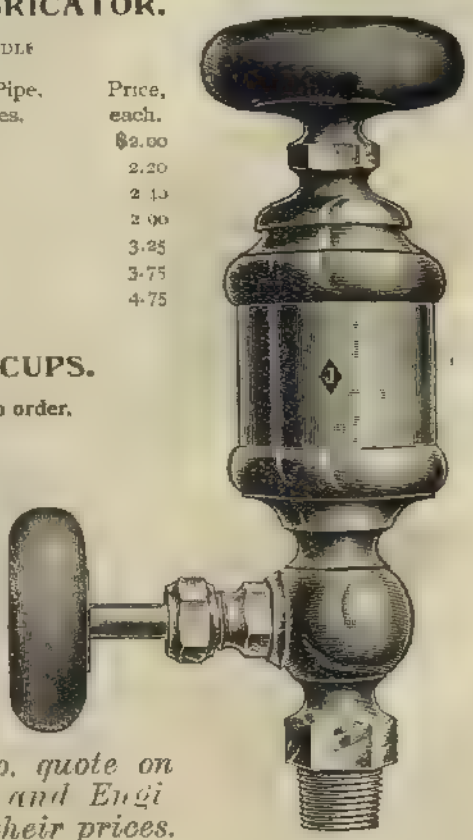
Diam. Bowl, inches.	Size Pipe, inches.	Price, each.
1	⅜	$2.00
1¼	⅜	2.20
1½	½	2 40
2	½	2 90
2¼	¾	3.25
2½	¾	3.75
3	¾	4.75

GREASE CUPS.

Threaded to order.

No.	Diam. inches.	Price each.
2	¾	$4.00
3	2	5.50
4	2¼	7.00
5	2¾	9.00

Montgomery & Co. quote on all kinds of Factory and Engineers' Supplies. Get their prices.



COMMON LUBRICATOR.

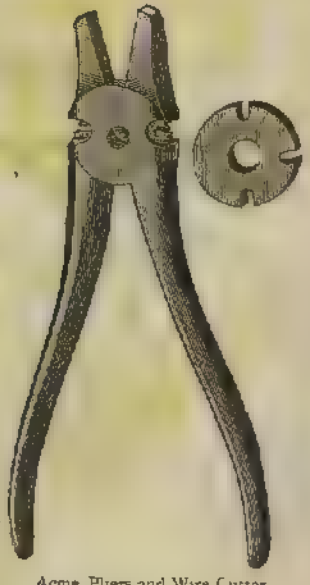
STARRETT'S ADJUSTABLE JAW CUT-NIPPER, No. 1.

The head and handles are of drop-forged steel, finely finished. All the parts are case hardened, except the jaws. The jaws are detachable, so that they can be removed, ground and adjusted when they have become worn. Each jaw can be ground away to the extent of ¼ inch, remaining as good as new for practical use; and when used up, if ever, new jaws can be procured. These jaws have a dove-tailed slot in their under side to receive a spline, which extends into a slot in the frame. A tapering screw through the frame and spline draws the jaw firmly down to a toothed seat in the frame, holding it securely. Style B Jaws specially shaped for cutting wire in bicycle rims. Unless otherwise ordered, Cut-Nippers with C Jaws will be sent.

5½ inch, M (for Music wire) . . . . . Price, $2.00
5½ " C, (for common use). . . . . " 2.00
5¾ inch, B, (for bicycle use). . . . . Price, $2.00
7 " either M or C. . . . . " 2.50
Extra Jaws, either M, C or B, which should be designated as above, per pair 50

ACME CUTTING NIPPERS
AND ACME COMBINED PLIERS AND WIRE CUTTER.

(Stevens' Patent,) with Interchangeable Cutters.



Acme Pliers and Wire Cutter

Solid Steel Acme Pliers and Wire Cutter, made with cutters of best steel.

	Per Dozen.
4½ inch, will cut wire not larger than No. 14	$10.00
6 " " " " " No. 11	12.00
8 " " " " " No. 8	15.00
10 " " " " " No. 6	24.00

Extra Cutters for above, 32 cents per pair.

Acme Cutting Nippers, Jaws of choicest tool steel, dovetailed into the head, making it as strong as solid steel.

No. 1.	12 inches long		each,	$2.25
" 2.	11 "	"	"	2.00
" 3.	10 "	"	"	1.75
" 4.	8 "	"	"	1.50
" 5	6 "	"	"	1.25

Extra Cutters, Nos. 1, 2 and 3, 40 cents per pair. Nos. 4 and 5, 35 cents per pair.

Acme Cutting Nippers

PATENT WIRE CUTTERS.

The cutting parts are made to gauge, of choice steel. They can be taken off to be ground, and when worn out can be replaced at a slight expense, making the tool as good as new.

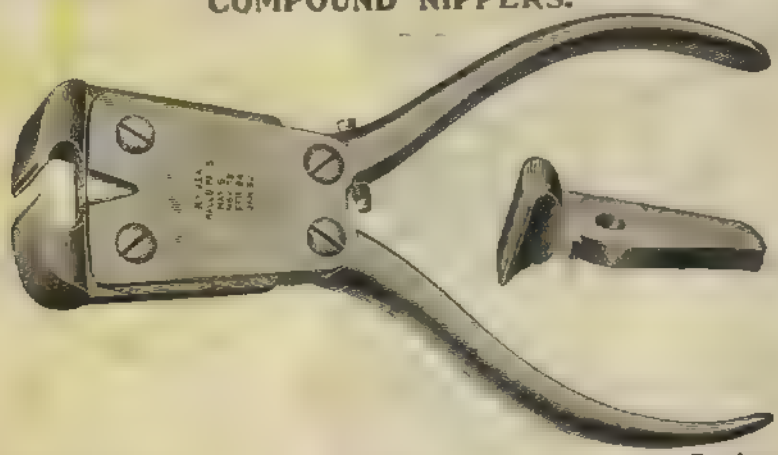
Nos.	0	1	2	3	4	5
Length, inches	15	12	11	10	8	5
Each	$3.00	2.25	2.00	1.75	1.50	1.25
Extra Cutters, per pair	.60	.40	.40	.40	.35	.35

CAREW'S PATENT WIRE CUTTERS.

Made entirely of forged steel. The cutting jaws of the very best tool steel. The jaws dovetail into place. No screws used.

Inches	6	8	10	12	14
Cutters, each	$1.75	2.00	2.25	2.60	3.00
Extra Jaws, per pair	.50	.55	.60	.65	.70

NEW AND GUARANTEED LINE OF HALL'S PATENT COMPOUND NIPPERS.



	Per dozen.	Each.
No. 1, Size 4 inch, Nippers	$12 00	$1.00
No. 2, " 5 " "	13.50	1 13
No 3, " 6 " "	19 50	1.63
No 4, " 7 " "	21.00	1.75
No 6, " 8 " "	24.00	2.00
No 9, " 11 " "	27.00	2.25

PARTS—All Parts Interchangeable.

	Per dozen.	Each.		Per dozen.	Each.
No. 1 Jaw	$3.00	$0.25	Handles	$3.00	$0.25
No. 2 "	3.00	.25	"	3.00	.25
No 3 "	3.60	.30	"	3.60	30
No 4 "	4.00	.34	"	4.00	.34
No. 6 "	5.00	.42	"	5.00	.42
No. 9 "	5.00	.42	"	6.00	.50

No. 1 to No. 4 Extra Screws.....$0 60 per doz. Nos. 6 and 9 Screws.....$1 20 per doz
" Springs..... 60 " " " Springs..... .84 "

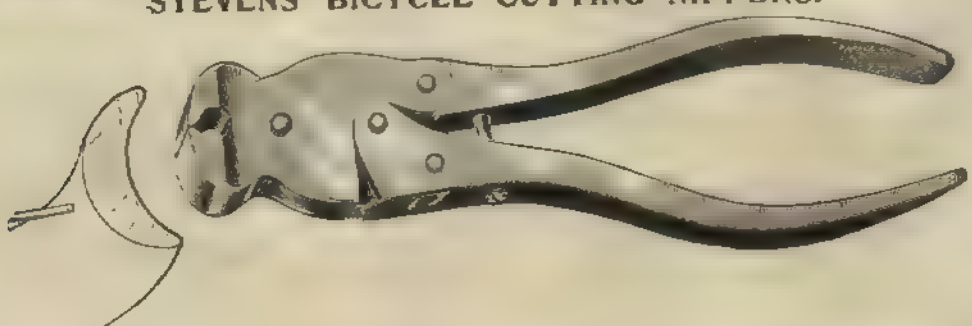
TYPEWRITER AND BICYCLE NIPPER.

Specially for cutting in small, narrow, angular and curved places.

No. 300. Size, 6 inches,
Per dozen. $19.50
Each 1.63

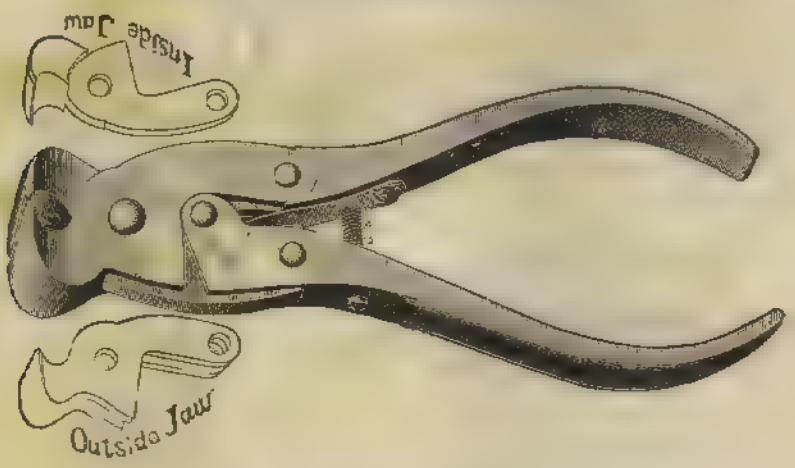
Price of parts same as No. 3.

STEVENS' BICYCLE CUTTING NIPPERS.



Bicycle Spoke Nippers.....each, $1.75

STEVENS' NIPPERS, No. 90.



5 inch.....each, $1.50
6 inch..... " 1.75

"EXCELSIOR" CUTTING NIPPERS.

These small Nippers are warranted to cut soft iron and brass wire, up to and including No. 14

If this breaks within three months from date of purchase, under condition of warranty you are entitled to a new pair.

Per dozen.....$2.50

Sample pair sent by mail, post paid, on receipt of 25 cents.

GLASS PLIERS.

German, Extra Quality.

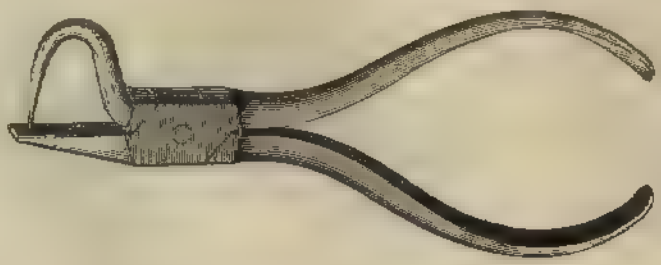
Length...in.	6	7	8	9
Per dozen..	$9.00	12.00	15.00	20.00
Each.....	.75	1.00	1.25	1.75

With wide nose, same price as above.

UMBRELLA PLIERS.

German, Extra Quality.

Length.....inches,	5	5½	6	6½	7	8
Per dozen..... $6.00		7.20	8.50	9.80	11.00	15.00

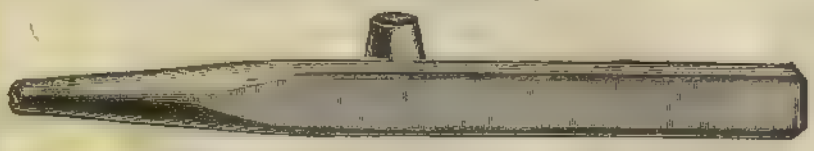


HAWK-BILL PLIERS.

German, Extra Quality.

Length.....inches,	4	4½
Per dozen.....	$6.00	6.00
Each.....	.50	.50

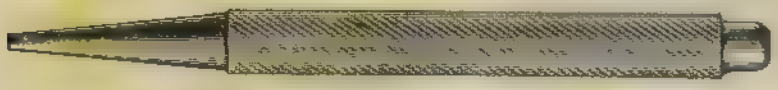
CUP-POINT NAIL SETS OR PUNCHES.



Will set any nail, large or small, round or flat head, brads, finishing nails, etc. without injury to the wood. Will set at any angle and will not split the head. Nails bent in driving straightened with it and then set. Will return or drive out any nail at any angle. Screws with worn or broken heads easily backed out with this set. Made from best tool steel and fully warranted.

Each ..... 15 cents.

CARPENTERS' CUP POINTED NAIL SETS.

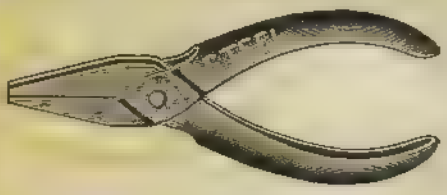


These Nail Sets are made from the best steel suitable for the purpose; are nicely tempered and polished. The knurled body makes it easy to hold without slipping through the fingers. Nos. 1 and 2 are made from ¼ and Nos. 3 and 4 from $\frac{5}{16}$ inch stock. Four sizes of points, Nos. 1, 2, 3, 4.

Price each..... 15 cents.

SPECIAL QUOTATIONS PER GROSS LOTS.

STEEL FLAT-NOSE PLIERS.



Bright finish. All steel. Rivet joint.

Size.....	4	4½	5	5½	6 inch.
Price, per doz.,	$1.20	1.40	1.60	1.80	2.00

PARAGON FLAT-NOSE PLIERS.

Full Nickel Plate. Polished Jaws, Screw and Nut Joint.

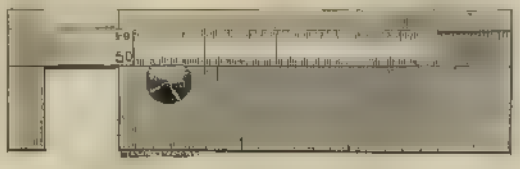
Size.....	4	4½	5	5½	6 inch.
Price, per doz.	$2.70	3.15	3.60	4.05	4.50

DRAW GAUGE.

No. 51¼. Patent Hollow Handle Draw Gauges, Usual..... Each, $1.25
" " " " " " " Improved ..... " 1.50
" " Nickel Plated " " " " ..... " 2.00

LOCK SLIDE CALIPER RULE.

The slide in this rule is graduated in 50ths and 64ths and verniers to 100ths, is quickly and accurately adjusted, and when adjusted can be firmly locked in position by a thumb nut on reverse side.



3 inch..... $2.00
4 " 2.50

Guns and Revolvers

On the following pages you will find short descriptions of a few guns and revolvers, such as are in general use and goods that we can thoroughly recommend. We only show a few of the leaders and at prices which we know can not be beaten by any other house. It is one of our many departments and we furnish these goods to our customers with a small margin added to the manufacturers' prices, just sufficient to cover cost of handling. We guarantee every article we show in this department to be exactly as represented and if not found so we will refund your money on receipt of $2.00. When the goods reach their destination you examine them, if satisfactory you pay the agent the price and the charges less what you have already sent us and the goods will be yours. If however, you prefer to send the full amount with the order, we will allow you to deduct a discount of 3 per cent. We can furnish you any gun on the market, whether it is listed here or not.

Sterling Guns..

For those who desire a thoroughly reliable gun, we offer the following list, knowing that they will give entire satisfaction and that the prices can not be duplicated. These are the Sterling semi-machine guns, containing all of the latest improvements and each one is a bargain at the price we quote.

No. 9106. 12 gauge, top lever, pistol grip, extension rib, laminated finish steel barrels, rebounding back action locks, low circular hammers, large head strikers, snap fore end, checked iron butt plate, checked oiled stock and fore end, case hardened mountings, 30 and 32 inch barrels. Weight, 7 to 8½ lbs. ..... EACH $9.35

No. 9306. 12 gauge, genuine laminated steel barrels, otherwise same as No 9106, 30 and 32 inch barrels. Weight, 7 to 8½ lbs. 9.85

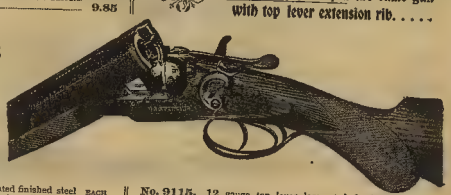
No. 9105. 12 gauge, top lever, pistol grip, extension rib, laminated finish steel barrels, back action locks, straight hammers, large head strikers, snap fore end, iron butt plate, checkered stock and fore end, case hardened mountings, 30 and 32 inch barrels. Weight, 7 to 8½ lbs. ..... EACH $8.75

Below we quote you the same gun with top lever extension rib. . . . . .

H. J. Sterling . . . Semi-Machine Guns

Send $2.00 and we will ship a gun C. O. D., with privilege of examination. 3 per cent off if full amount is sent with the order.

Our Prices can not be beaten. We invite . . . . . Comparison



No. 9112. 12 gauge, top lever, laminated finished steel barrels, extension rib, genuine full bar, rebounding locks, pistol grip, solid strikers, snap fore end, low circular hammers, checked iron butt plate, 30 and 32 inch barrels. Weight, 7 to 8½ lbs. ..... EACH $9.95

No. 9312. 12 gauge, genuine laminated steel barrels, same as No 9112, 28 and 30 in barrels. Weight, 6½ and 7½ lbs. 11.35

No. 9115. 12 gauge, top lever, laminated finish steel barrels, rebounding bar locks, circular hammers, (below line of sight), double bolt with extra Greener cross bolt, pistol grip, Deeley & Edge patent fore end, solid strikers, matted rib, ornamented rubber butt, 30 and 32 in barrels. Weight, 7 to 8½ lbs. ..... EACH $16.65

No. 9315. 12 gauge genuine laminated steel barrels, otherwise same as No. 9115, 30 and 32 inch barrels. Weight, 7 to 8½ lbs. 17.75

Marlin Rifles

No. 92324. 32 calibre, 24 inch round barrel; holds 18 short cartridges **$11.55**
No. 92424. 32 calibre, 24 inch oct barrel; holds 18 short cartridges **11.85**
No. 92124. 22 calibre, 24 inch round barrel; holds 25 short cartridges **11.65**
No. 92224. 22 calibre, 24 inch oct barrel, holds 25 short cartridges **11.95**
No. 92524. 25 calibre 24 inch round barrel; 14 shots **11.25**
No. 92626. 25 calibre, 26 inch oct. barrel; 15 shots **12.57**

Easiest working rifle in the market. It can be adjusted to shoot either long or short cartridges. Weights from 6 to 7¼ lbs.

The Rain will not interfere with your sport if you have one of our Mackintoshes.

INTERNATIONAL SUPPLY DEPT. PUBLISHING CO.
Chicago Ill. TRADE MARK Philadelphia Pa.

"New American"

Stub Twist Barrels Matted Rib Choke Bored

Hammerless Shot Guns

A $40.00 Gun for $21.75

... A high grade American made gun ...

This gun has many advantages over the higher priced hammerless guns now before the public The device on under side of frame which admits of gun being opened without cocking is a decided improvement and will be appreciated by all sportsmen. The lock work combines simplicity and great strength and can be taken apart for cleaning and repairing by any one. The material and workmanship are of the best and the shooting qualities are all that could be asked for. Barrels can be removed and put on without cocking the gun. Automatic safety catch.

Our Prices are ... Exceptionally Low

and we challenge a comparison with any other house whether wholesale or retail.

No. 920. 12 gauge only, fine stub twist barrels, matted rib choke bored checkered black walnut stock and fore arm, pistol grip rubber butt automatic safety catch, 30 inch barrels Weight, 7¼ to 8 lbs ..... EACH $21.75

No. 922. 12 gauge only, fine two blade Damascus barrels, matted rib, fine walnut stock and fore arm, pistol grip, rubber butt, automatic safety catch, 30 inch barrels Weight, 7¼ to 8 lbs ..... EACH 24.75

Single Barrel ... Breech Loaders

Guaranteed the Best Value in the World for the Money.

No better shooting gun at any price. Take advantage of our liberal 3 per cent discount and send full amount with your order.

For those desiring single barrel guns we offer an extra good gun Case hardened frame complete top action.

No. 9281. 12 gauge Scott top lever, blue rolled steel barrel, pistol grip stock, rebounding hammer, checkered patent fore end, fancy butt plate, 30 and 32 inch barrels Weight about 7 lbs ..... EACH $5.85

No. 98281. 16 gauge, same description as No 9281 28 and 30 inch barrel. Weight, about 6½ lbs 5.90

No. 9282. 12 gauge, Scott top lever, twist barrel, pistol grip stock, rebounding hammer, checkered patent fore end, fancy butt plate, 30 and 32 inch barrel. Weight, about 7 lbs ..... EACH 6.85

No. 98282. 16 gauge, same description as No 9282 28 and 30 inch barrel. Weight, about 6½ lbs 7.25

We also quote the Marlin Safety Carbine for Boys.

No. 98932. 32 calibre, 20 in barrel, 12 shots. Weight, 6 lbs $10.75

Spencer

Hammerless Choke Bored Detachable Barrel

Repeating Shot Guns

The Spencer Repeating Shot Gun having been thoroughly tested during the past eight years both by experts and by novices, has been found to meet all the requirements of the sportsman Of the thousands now in use all over the country, no complaint has been made, either as to the construction or working of the gun.

No. 934. Model '96, 12 gauge only, all best drop forged steel, barrels twist steel, neatly ground, showing fine figure, bored to shoot any nitro or black powder stock hard, well seasoned American walnut, egg shell oil finish pistol grip, frame and breech block case hardened, side lever, with roll bearing cam, making it easy to manipulate, slide handle bar well seasoned American walnut grooved and checkered Gun takes apart with key, allowing use of extra barrels, magazine with raised tracks for slide handle to work on prevents rubbing off of blued finish, checkered iron butt plate, 30 and 32 inch barrels Weight, 7½ to 8¼ lbs ..... EACH $17.55

No. 933. 12 gauge only, fine Damascus barrel, checkered pistol grip, rubber butt plate, choked, detachable barrel and magazine, 30 and 32 inch barrels. Weight, 7¼ to 8¼ lbs ..... EACH $26.75

You probably intend taking a pleasure trip; if so, you need one of our Canopy Top Wagons. Fully described in our carriage and buggy department. .....

If you have any doubt as to our reliability, read what our Bankers say in the front part of this Catalogue

INTERNATIONAL SUPPLY DEPT. PUBLISHING CO.
Chicago Ill. TRADE MARK Philadelphia Pa.

Celebrated Davis ... Hammer Shot Guns $30.00 Value for $17.80

This gun has the popular top snap action, with straight matted rib; full pistol grip stock with rubber cap, grip and fore arm checked; fine engraving, low circular hammers; double bolted, bolting on both lug and extension rib made on the interchangeable system, with rebounding bar locks; solid and straight large head plungers, choke bored for close and hand shooting, reinforced breech for nitro powders.

No. 963. 12 gauge, fine twist barrels, length 30 and 32 inches. Weight, 7 to 8½ lbs. ..... EACH $17.80

No. 9063. 10 gauge, fine twist barrels, length 30 and 32 inches. Weight, 9 to 10½ lbs. 17.80

No. 964. 12 gauge fine Damascus barrels, length 30 and 32 inches. Weight, 7 to 8½ lbs. ..... EACH $18.85

No. 9064. 10 gauge, fine Damascus barrels, length 30 and 32 inches. Weight, 9 to 10½ lbs. 18.85

A $3.00 Flobert Rifle for $1.65

We have a full line of Duck Coats, suitable for hunting purposes.

We Guarantee every article shown in this department to be exactly as represented and of the very highest grade. If you do not find them so, we will return your money.

No. 95100. Flobert Rifle, shoots BB and CB caps only, light stock side extractor, bright mountings. ..... EACH $1.65

No. 95202. Remington action, shoots 22 caliber short cartridges or bullet caps, rifled, case hardened mountings, walnut oiled and checked pistol grip stock, scroll and screwed guard, 24 inch barrel. Weight, 4 to 5 lbs. 2.15

Standard Gallery ... Targets

Nos. 919 and 919½. No. 93. Nos. 921 and 922.

Our Targets for out door gallery practice are made of fine, extra heavy, close grained gray iron, neatly painted all over and are absolutely the best that can be made for the purpose. Cut shows sectional view of patent rings and heavy center.

See what ... the Banks say regarding our responsibility

Copies of their Letters, in front part of this Catalogue

No. 919½. Plain round ¾ inch iron 12 inches diameter, assorted sizes open bull's eye, for BB caps, ringing gong when bull's eye is hit, self setting ..... EACH $1.00

No. 919. Same as No 919½, ¾ inch iron, with open bull's eye, for 22 100 cartridges 1.45

No. 93. H M Quackenbush's steel bell image target, 12 inches in diameter. Weight, 11½ lbs. 1.90

No. 922. Round, 12 inch diameter, entirely of heavy iron, for 22-100 cartridges, come figure rising and ringing gong when bull's eye is hit. Reset by rope from stand. EACH $2.90

No. 921. Same as No. 22, but made of light iron, for BB caps 3.35

These steel targets are adapted for 22 caliber rifles and are very interesting to shoot at, they ring a bell vigorously and No 93 throws up a bird when the bull's eye is hit. The face is steel and graduated from 1 to 10. The whole is a neat, durable affair well worth the money.

No. 9116. Entirely of heavy iron, for 22-100 cartridges, birds, stars and pipes falling back when hit; six objects to shoot at, made for out door shooting, reset by rope from stand. ..... EACH $2.75

No. 9118. Same as No. 9116, but larger, with eight objects to shoot at 3.45

Remember our three per cent discount if you send full amount with your order

DOUBLE ACTION REVOLVERS.

These are Genuine American Double Action. No cheap or shoddy goods furnished. Fully warranted.

2½ inch octagon barrel.

	Each
No. 14132. 32 cal., center fire, 6 shot, nickel plated, rubber saw handle stock	1.55
No. 14138. 38 cal., center fire, 5 shot, nickel plated, rubber saw handle stock	1.55
No. 14144. 44 cal., center fire, 5 shot, nickel plated, rubber saw handle stock	1.95

4¾ inch octagon barrel.

No. 14232. 32 cal., center fire, 6 shot, nickel plated, rubber saw handle stock	2.25
No. 14238. 38 cal., center fire, 5 shot, nickel plated, rubber saw handle stock	2.35
No. 14244. 44 cal., center fire, 5 shot, nickel plated, rubber saw handle stock	2.55

6 inch octagon barrel.

No. 14432. 32 cal., center fire, 6 shot, nickel plated, rubber saw handle stock	2.55
No. 14438. 38 cal., center fire, 5 shot, nickel plated, rubber saw handle stock	2.80
No. 14444. 44 cal., center fire, 5 shot, nicdel plated, rubber saw handle stock	2.97

Young American, Double Action, Small Frame.

No. 14132. 22 cal., rim fire, 7 shot, nickel plated, rubber saw handle stock	2.15
No. 14332. 32 cal., center fire, 5 shot, nickel plated, rubber saw handle stock	2.45

Automatic Revolvers.

Here we have the genuine Harrington & Richardson Automatic Revolvers.

No. 14732. 32 cal., center fire, nickel plated and rubber stock, 6 shot, 3½ inch barrel. Weight 18 oz.	2.95
No. 14738. 38 cal., center fire, nickel plated and rubber stock, 6 shot, 3½ inch barrel. Weight 17 oz.	2.95
No. 14838. Same as No. 14738 but with 4 inch barrel	3.60
No. 14938. Same as No. 14738 but with 5 inch barrel	4.25

Rim Fire Cartridges.

No.	Cal.	Per 100	Per M
1	22 short	37c	$2.50
2	22 long	39c	2.85
3	22 long rifle	52c	3.60
9	32 short	48c	4.65
10	32 long	62c	5.00
12	38 short	79c	7.85
13	38 long	87c	8.65

Center Fire Rifle and Revolver Cartridges.

No.	Cal.	Per 100
14	22 Winchester	$1.10
15	22 Extra long	1.28
16	25-20 Marlin	1.10
17	32 short	.89
18	32 long	.98
19	32 Marlin, 1894 model	.85
20	32 Harrington & Richardson	1.37
21	44 Marlin	.95
22	38 short	1.05
23	38 long	

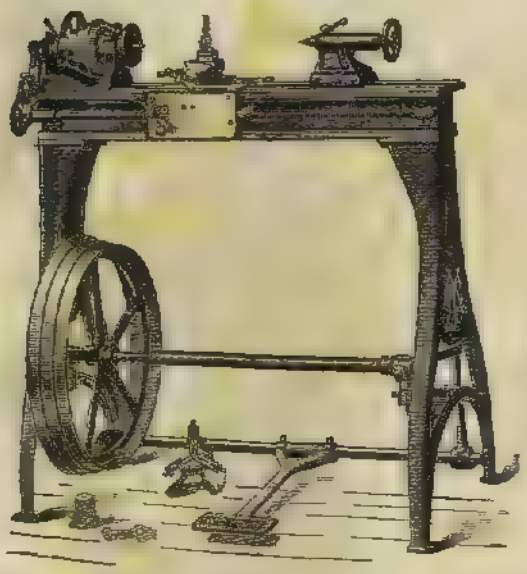
Machine Loaded Paper Shot Shells.

These are waterproof paper shot shell, same as in general use. Put up in boxes of 25 shells, 20 boxes to the case. The uniformity of the material used and the regularity of the machine work makes an even pressure on the powder and guarantees a level setting of the wads and the compression is such that it secures the highest explosive force. We quote the shells in most general use as follows. The prices however subject to change without notice.

			Per 100
No. 1205.	Loaded with 3 drachms of powder, one ounce of shot		1.20
No. 1211.	" " 3¼ " " " 1⅛ " "		1.25
No. 1225.	" " 3½ " " " 1¼ " "		1.26
No. 1235.	" " 3¾ " " " 1⅜ " "		1.31
No. 1245.	" " 4 " " " 1½ " "		1.40

We offer the Peter's celebrated Quick Shot loaded with King's celebrated Quick Shot Powder, two card wads, two elastic wads over powder, best quality of shot, accurate to gauge and sure fire, guaranteed to be the best in use because the best powder and shells are used and great care is exercised in the loading. If these shells are desired add 84 cents per hundred to the above prices.

We furnish all the standard makes of Cartridges and Guns Whether listed or not.



YOUNG'S 9 INCH SCREW CUTTING LATHES.

In presenting this Lathe to the trade, it has been our aim to furnish at a reasonable price, a machine combining neatness of design and finish, with such features as will enable a workman to do a great variety of work without going to the expense of purchasing a long list of extras, which frequently amount to nearly as much as the cost of the Lathe.

We provide each Lathe with Hollow Spindle Compound Rest, Center Rest, Reversing Motion for Cutting Right or Left Hand Threads, Hand Rest Attachment with long and short T's, Belt, a full set of Change Gears, Face Plate Centers, Wrenches, etc.

The Head Spindle has a ⅝ inch hole its entire length, and the centers correspond to the Morse Taper Socket, No. 1.

The Cone has three changes for a 1¼ inch belt and with the Back Gears gives six changes of speed.

The Compound Rest can be adjusted to any angle, and can also be moved to and from the centers, across the bed of the Lathe. The Tool is raised and lowered by means of a screw.

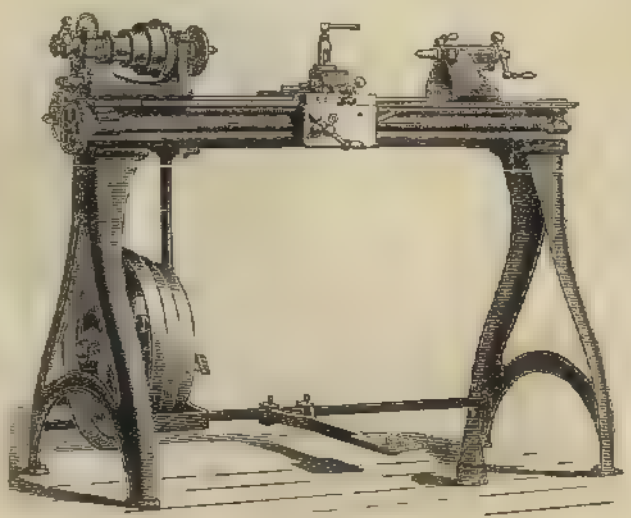
The Feed, both for Turning and Screw Cutting, is operated by an open and shut nut and lever in the Apron. Gears for cutting screws, from 6 to 48 are furnished. The Spindles, Lead Screw, Rack, Studs, and all the smaller Gears are made of the best machinery steel.

Swing, inches.	Between Centers, Inches.	Length of Bed, Inches.	Net Weight.	With Foot Power.	With Countershaft.	On Short Legs.
9	24	41	300	$73.00	$75.00	$75.00
9	30	53	320	83.00	85.00	85 00

Countershaft, when wanted with Foot Power, ... $10.00
Eight Inch Face Plate, 4 slots..... 3.00
Set of Four Chuck Jaws, with Set Screws for same..... 2.00
Face plate for Drill Chucks. 1.50
Spur and Female Centers, each... .... $1.50
Crotch Center..... 1.25
Step Center..... 1.25
Square Center 1.50
Blank Center, for holding Chucks. 1.00
Plain Drill Chuck, with Set Screw 1.75

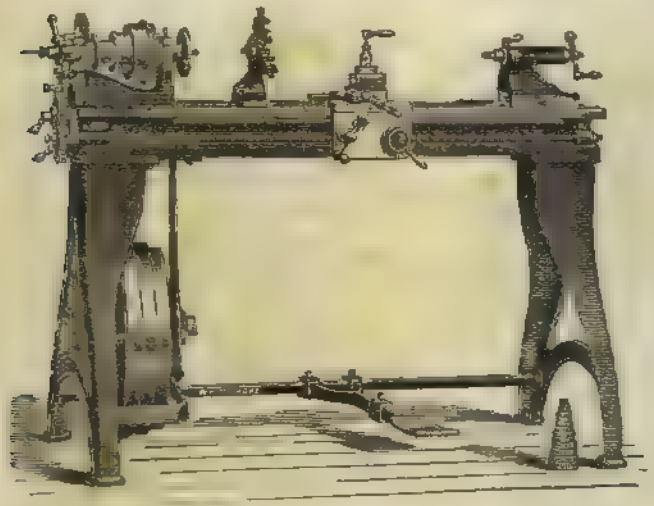
YOUNG'S 10 INCH SCREW CUTTING LATHES.

This Lathe is designed to meet the demand for a light, strong Lathe for either power or foot power. The Spindles, Screws, Studs, and Feed Gears are of Steel, and the Rack and all Gears are cut. The Head Spindle has a half-inch hole through it. The Cone has three changes for 1½ inch belt and with the Back Gears give ample power for heavy work. The Carriage is gibbed to the outside of the Bed both on the front and back side its whole length giving great stiffness to the tool. Has Screw Feed, operated by an Open and Shut Nut in the Apron, and is changed from Right to Left Feed by a reversing Lever in the Head. Change Gears to cut 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28 and 32 threads to the inch, go with the Lathe.



Length of Bed, Feet.	Distance Between Centers, Inches.	Swings Over Ways, Inches.	Swings Over Carriage, Inches.	Price.
4	28	10	6½	$140.00
5	40	10	6½	150.00

Belt for Foot Power Lathe.....$1.00
Countershaft, when wanted with Foot Power..... ..10.00
Compound Rest..... .....20.00
Center Rest..... 4.50
Follow Rest 3.50
Eight Inch Face Plate. 4 slots..... 3.00
Set of Four Chuck Jaws, with Set Screws for same..... ..... 2.00
Face Plate for Drill Chucks.....$1.50
Screw Chuck, 3 inch 2 00
Hand Rest attachment for wood turning. 2 00
Spur and Female Centers, each.. .. .. .. 1 50
Crotch Center..... 1.25
Step Center..... ... 1.25
Square Center..... 1.50
Blank Center, for holding chucks 1.00
Plain Drill Chuck, with Set Screw..... 1.75



YOUNG'S 12 INCH SCREW CUTTING LATHES.

Light Pattern.

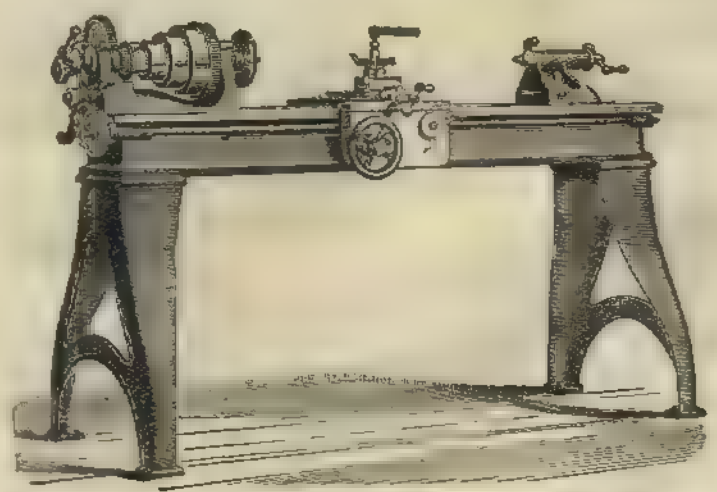
The Spindles, Screws, Studs, and Feed Gears are of steel, and the Rack and all Gears are cut. The Cone has three changes for 1¾ inch belt, and with the Back Gear gives six changes of speed. Has Screw Feed operated by an Open and Shut Nut in the Apron, and is changed from right to left Feed by a Reversing Lever in the Head. Change Gears to cut 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28 and 32 threads to the inch go with the Lathe.

Length of Bed, feet	4	5	6
Distance between Centers, inches	28	40	52
Swing over Ways, inches	12	12	12
Swing over Carriage, inches	9½	9½	9½
Each	$170 00	180.00	190.00

Rise and Fall Rest, extra	$20.00	Hand Rest Attachment for Wood Turning,	$2.00
Compound Rest	20.00	3 inch Screw Chuck	2.00
Taper Turning Attachment	20.00	Spur and Female Centers	each, 1.50
Countershaft, when wanted with power	12.00	Crotch Center	1.25
8-inch Face Plate (4 slots)	3.00	Step Center	1.25
Face Plate for Drill Chucks	1.50	Plain Drill Chuck, with Set Screw	1.75

YOUNG'S 12 INCH SWING ENGINE LATHES.

Heavy Pattern.



This Lathe has been designed to meet the demand for a heavier and a stronger Lathe, of this size, than has up to this time been placed upon the market. It has a forged steel spindle [illegible] hole its entire length. The Rest is wide and heavy having a bearing of its entire length on the ways. It is geared on [illegible] and has a quick sliding motion, and a positive stop, similar to the Lathe swing [illegible] The rest is raised up by a hanging [illegible] and a steel lead screw is used to move it. It is operated by an open and shut nut, of improved construction, in the apron. The friction feed is operated by a steel worm working on the screwed screw. The racks fastened to the side of the bed, below the screw, allowing the latter to be placed as close to the under side of the ways as it can be run, without touching. All rods, studs, screws and small gears are made of steel. This Lathe is also made with lock gib rest, operated with screws and fall screw—if so ordered, at the same prices for plain rest. The countershaft has [illegible] pulleys 10x3 inches, and should make 150 revolutions per minute. Length of bed, 6 feet. Swing over bed, 22 inches. Swing over raise and fall rest, 6 inches. Swing over plain rest, 7 inches. Turns, 43 inches. Weight, [illegible] pounds.

Each $280.00

Extra for Foot of Bed ..... $10.00 Extra for Compound Rest $25.00

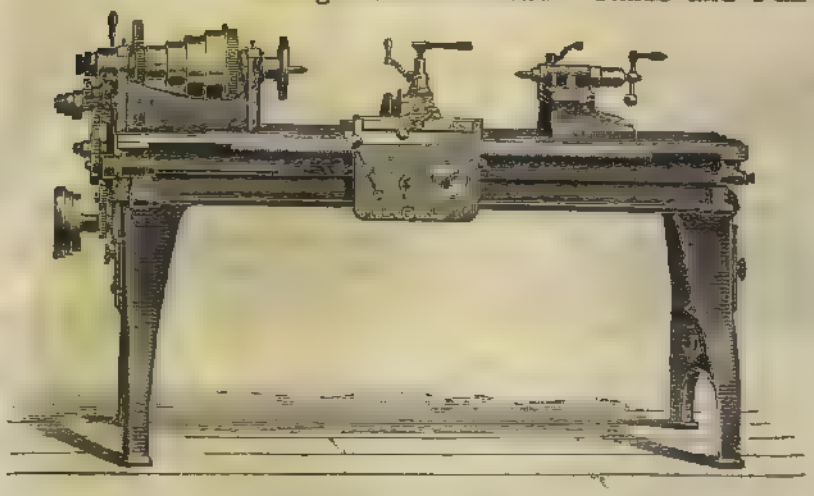
YOUNG'S 14 INCH SWING ENGINE LATHES.

This Lathe is made with plain or raise and fall gib rest. Has steel lead screw, and is operated with open and shut nut. The friction feed is operated by a steel worm in connection with the slotted screw. The countershaft has friction pulleys 10x3 inches and should make 150 revolutions per minute. Length of bed, 7 feet. Swing over bed, 14 inches. Swing over raise and fall rest, 7 inches. Swing over plain rest, 8¾ inches. Turns, 43 inches.

Each	$310.00	Extra for Cross Feed	$15.00
Extra for Compound Rest	25.00	Extra for Foot of Bed	10.00

14-INCH SWING ENGINE LATHES.

Single-Geared Head. Raise and Fall Rest.



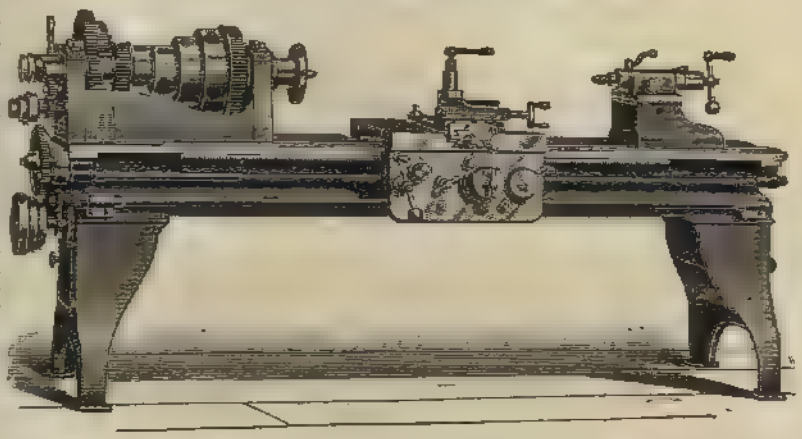
It has a hollow spindle, running in hard bronze metal bearings. The step is attached to the head, entirely independent of the box, thus relieving the bearings from all strain. Both lead screw and feed rod are in front of machine. The large feed cone and its attached gear are on an adjustable arm, swinging on the rod box. This device allows change of gears on feed rod to give any lateral or cross feed that may be required and the tightening of the feed belt without relacing. The apron contains an open and shut nut, used in screw cutting; friction connections for lateral and cross feed; and a sliding pinion to throw the feed connections out of gear when cutting screws, and there is no annoyance from revolving handles. A receptacle is provided in each leg, where change gears, tools, and wrenches can be kept free from dirt and oil. Countershaft has improved Bub-friction pulleys and noiseless clutch. The outfit of each lathe is one large and one small face plate, centre rest, two centres of cast steel, a set of change gears to cut from 6 to 36 threads, three change feed rod gears, necessary wrenches, and countershaft. We make these lathes with taper attachment, if desired; also with a plain gibbed rest and screw ring tool post for raising and depressing the tool, and with any length of bed. All the lathes have power cross feed.

Front bearing 3⅜ inches long, 2⅜ inches in diameter. Back bearing 2½ inches long, 1¾ inches in diameter. Nose on spindle, 2⅛ inches in diameter, 10 threads to the inch. Hole in spindle, ⅝ inch. Centres conform to Morse taper. Swings over ways 15 inches. Swings over raise and fall rest 6½ inches. Distance between centres (6 ft. bed), 39 inches. Cone has four sections 3¼, 4⅝, 6½ and 8⅛ inches in diameter by 2½-inch face. Ratio of back gearing, 7 to 1. Pulleys on countershaft 10 inches in diameter by 3-inch face. Speed of countershaft, 140 revolutions per minute. Weight (6 ft. bed), 1,100 lbs.

14 in. x 6 ft. Raise and Fall Lock Gib Rest.....$250.00
14 in. x 6 ft. Plain Gib Rest and Power Cross Feed..... 250.00
14 in. x 6 ft. Compound Rest, Power Cross Feed..... 265.00
Extra, per foot, $8.00. Extra, for Taper Attachment, $45.00 | Extra, for Double Back Gears, 12.00

16-INCH SWING ENGINE LATHES.

Double-Geared Head. Compound Rest. Power Cross Feed.

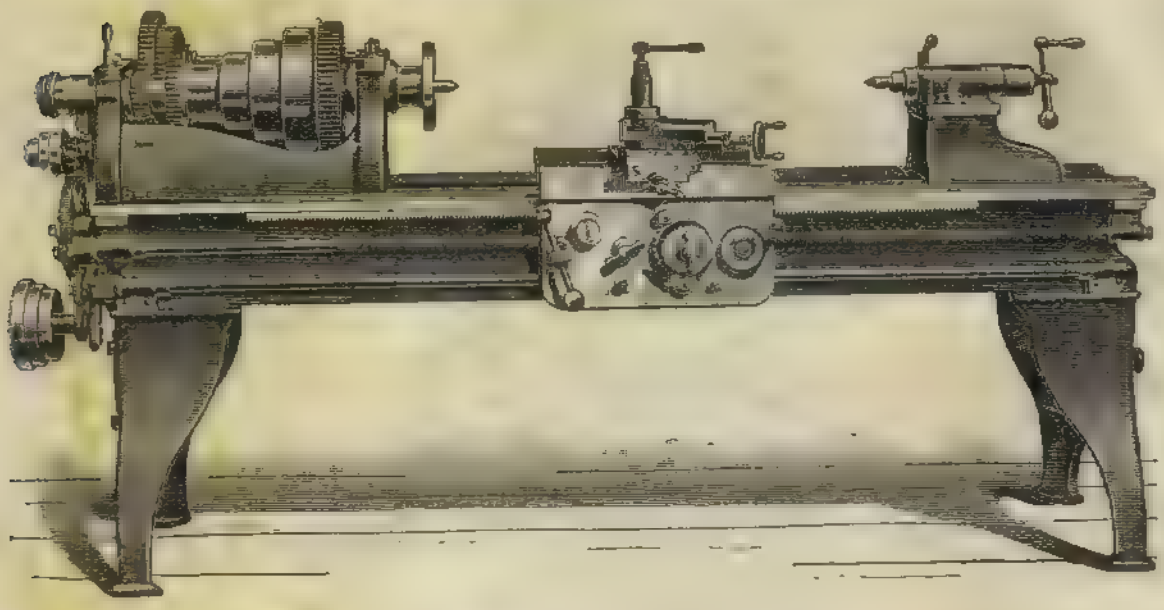


The advantage of a lathe with this system of back gearing is an even gradation of speed to the spindles. Twelve changes are given, from 8 to 363 revolutions per minute, without the great difference between any of them that is common on lathes with one set of gears. It has a hollow steel spindle, running in hard bronze metal bearings. The step is attached to the head entirely independent of the box, thus relieving the bearings from all strain. Both lead screw and feed rod are in front of the machine. The large feed cone and its attached gear are on an adjustable arm, swinging on the rod box. This device allows change of gears on the feed rod to give any lateral or cross feed that may be required, and the tightening of the feed belt without relacing. The apron contains an open and shut nut, used in screw cutting; friction connections for lateral and cross feed, and a sliding pinion for the lateral feed. The sliding pinion is to throw the feed connections out of gear when cutting screws, and there is no annoyance from revolving handles. A receptacle is provided in each leg where change gears, tools, and wrenches can be kept free from dirt and oil. The outfit of each lathe is one large and one small face plate, centre rest, two centres of cast steel, a set of change gears to cut from 2 to 36 threads, three changes feed rod gears, necessary wrenches, and countershaft.

Front bearing, 4 inches long, 2⅞ inches diameter. Back bearing 2⅜ inches long, 1⅝ inches diameter. Nose on spindle, 2⅛ inches diameter, 7 threads to the inch. Hole in spindle, ⅞ inch or 1⅛ inches, as desired. Hole in spindle conforms to Morse taper. Swings over ways, 17 inches. Swings over compound rest, 11 inches. Swings over plain gibbed rest, 11 inches. Distance between centres (6 ft. bed), 31 inches. Cone has four sections 10, 8, 6¼, and 4⅜ inches by 2⅝-inch face. Ratio of back gearing, 8 and 4 to 1. Pulleys on countershaft, 11-inch diameter by 3-inch face. Speed of countershaft, 140 revolutions per minute. Weight (6 ft. bed), 1,600 lbs.

16 in. x 6 ft. Raise and Fall Lock Gib Rest.....$330.00
16 in. x 6 ft. Plain Gib Rest, Power Cross Feed..... 330.00
16 in. x 6 ft. Compound Rest, Power Cross Feed..... 345.00
Extra, per foot, $10.00. Extra, for Taper Attachment, $50.00 | Extra, for Double Back Gears, 15.00

18-INCH DOUBLE-GEARED HEAD ENGINE LATHES.



This lathe has double back geared head, compound rest, power cross feed, and screw ring on tool post for raising and falling the tool. The advantage of a lathe with this system of back gearing is in an even graduation of speed to the spindles. Twelve changes are given, from 6 to 356 revolutions per minute, without the great difference between any of them that is common on lathes with one set of gears. It has a hollow steel spindle, running in hard bronze metal bearings. The step is attached to the head entirely independent of the box, thus relieving the bearings from all strain. Both lead screw and feed rod are in front of the machine. The large feed cone and its attached gear are on an adjustable arm, swinging on the rod box. This device allows change of gears on the feed rod to give any lateral or cross feed that may be required, and the tightening of the feed belt without relacing. The apron contains an open and shut nut, used in screw cutting; friction connections for lateral and cross feed; and a sliding pinion for the lateral feed. The sliding pinion is to throw the feed connections out of gear when cutting screws, and there is no annoyance from revolving handles. A receptacle is provided in each leg where change gears, tools, and wrenches can be kept free from dirt and oil. Countershaft has improved hub friction pulleys and noiseless clutch. The outfit of each lathe is one large and one small face plate, centre rest, two centres of cast steel, a set of change gears to cut from 2 to 18 threads, three changes feed rod gears, necessary wrenches, and countershaft. These lathes have power cross feed.

Front bearing, 5½ inches long, 2¾ inches diameter. Back bearing, 3⅝ inches long, 2¼ inches diameter. Nose on spindle, for small hole 2⅜ inches diameter, 6 threads to the inch. Nose on spindle, for large hole, 2⅝ inches diameter, 6 threads to the inch. Hole in spindle, 1⅛ inch or 1½ inches, as desired. Hole in spindle conforms to Morse taper. Swings over ways, 19¼ inches. Swings over compound rest, 13¾ inches. Swings over plain gibbed rest, 13⅝ inches. Distance between centres, (8-ft. bed), 49 inches. Cone has four sections, 11⅛, 8⅞, 6⅝, and 4⅜ inches by 2⅛-inch face. Ratio of back gearing, 11 and 5 to 1. Pulleys on countershaft, 12-inch diameter by 3½-inch face. Speed of countershaft, 120 revolutions per minute. Weight, (8-ft. bed), 2,200 lbs.

18 in. x 8 ft. Raise and Fall Lock Gib Rest	$400.00
18 in. x 8 ft. Plain Gib Rest, Power Cross Feed	400.00
18 in. x 8 ft. Compound Rest, Power Cross Feed	420.00
Extra, per foot	12.00
Extra, for Taper Attachment	60.00
Extra, for Double Back Gears	20.00

Price of special Lathes on application.

ENGINE COUNTERS.

With Positive Motion.

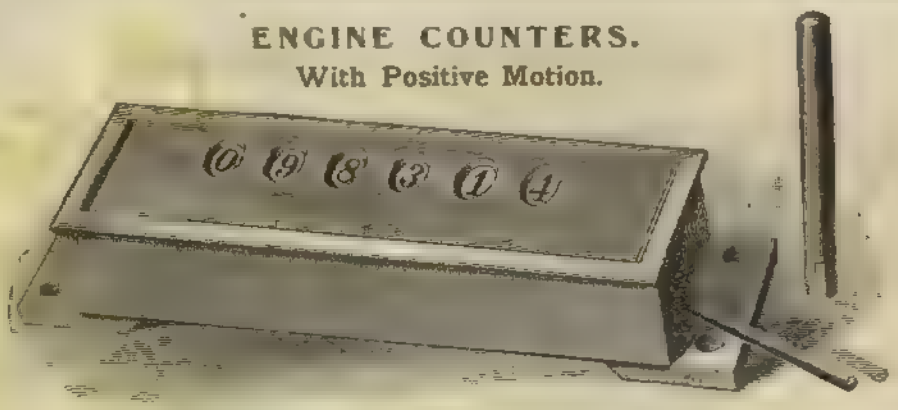


Fig. 3.

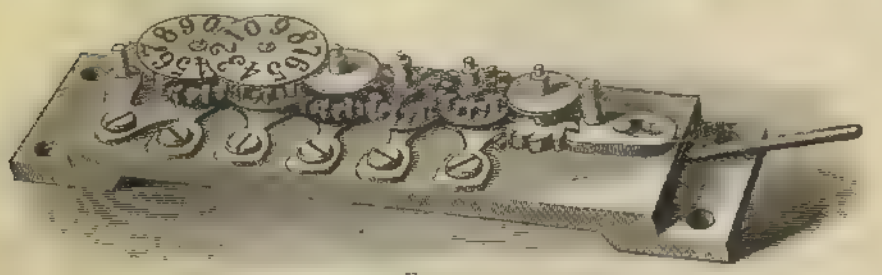


Fig. 4.

These Instruments have met with the greatest success, and have proved to be in every respect the best of all Registers or Counting Machines in use. They are constructed without springs, combine cheapness with excellence of workmanship, are perfect in action, and durable.

Counters in Square Metal Cases.

LARGE SIZE.

				Plain.	Resetting.
Figs. 3 & 4.	4 figs. counting 10,000,	in cases, 7x2½	inches	$20.00	$24.00
" "	5 " " 100,000,	" 8x2½	"	24.00	28.00
" "	6 " " 1,000,000,	" 9x2½	"	28.00	32.00
" "	7 " " 10,000,000,	" 10x2½	"	32.00	36.00

SMALL SIZE

Figs. 3 & 4.	4 figs. counting 10,000,	in cases, 4½x1¾	inches	$13.50	$17.00
" "	5 " " 100,000,	" 5 x1¾	"	16.00	20.00
" "	6 " " 1,000,000,	" 5½x1¾	"	20.00	24.00
" "	7 " " 10,000,000,	" 6 x1¾	"	24.00	28.00

SPEED INDICATORS.

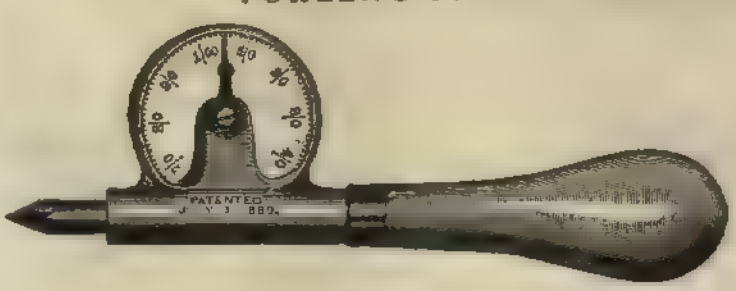
Fig. 1.

Fig. 1. 1½ in. Dial, 4 figures, $12.00

Fig. 2. 4 in. Dial, 6 figures, $16.00

Fig. 2.

FOWLER'S PATENT SPEED INDICATORS.



This Indicator is simple in construction, compact, and accurate. It will indicate to 5,000 revolutions, either right or left hand. An extra point, 6 inches long, for use on dynamo machines, can be furnished when desired.

Each $2.00
Extra Points. . each, 50

COUNTING AND TALLYING MACHINES.

Brass Case Machine.

The value of an automatic registering device for use on duplicating machines, such as power presses, printing presses, bolt, screw, wood working, weighing and measuring machines, grain tallies, and a host of other automatic machines which require an accurate record of their results, is being constantly more thoroughly appreciated.

Machine is made entirely of steel and brass, each part being made of the metal best suited to its purpose, thus the case is of polished brass, the pinions, ratchet wheel and lever of best steel. The dials are of brass upon which the figures are plainly stamped in black enamel.

The dials can instantly be set at zero, or to any desired starting number. When the highest figure is reached it will repeat automatically. The counter requires no oil.

No. 2	Size, 3¼ x 1 9-16 x ⅝ inches.	Weight, 7½ ounces.	Counts,	100.	Price,	$ 6.00
" 3.	" 4 x 1 9-16 x ⅝ "	" 9 "	"	1,000....	"	7.00
" 4	" 4⅝ x 1 9-16 x ⅝ "	" 11 "	"	10,000....	"	8.00
" 5	" 5⅛ x 1 9-16 x ⅝ "	" 14 "	"	100,000....	"	10.00
" 6	" 6¼ x 1 9-16 x ⅝ "	" 17 "	"	1,000,000....	"	12.00

Number of Counter corresponds with number of figures.

Iron Case Machine.

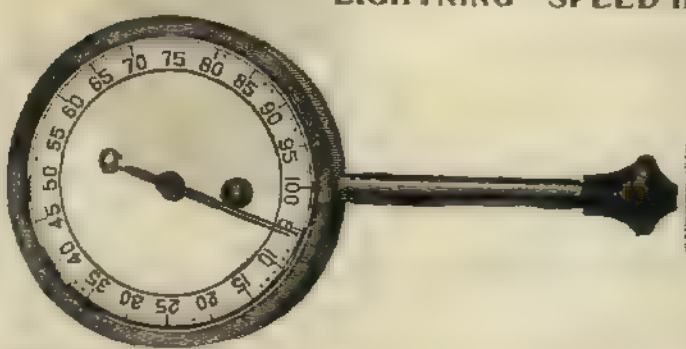
The want of a reliable accurate Counting Machine, at a price within the reach of all, has long been evident especially to save time and labor in counting out small lots of the same article from a large quantity of stock. To meet this need great pains have been taken to produce in the Bristol a Counter with Large figures, that may be absolutely depended upon to keep a perfect register of every piece or article delivered from any machine to which it is attached.

Being highly finished, it is an ornament to any machine to which it is attached. It is made entirely of iron and steel, each part being made of the metal best suited to its purpose; thus the case is of cast iron, black enameled, or nickeled, and the pinions of best steel. The dials are white, have 5-8 in. figures plainly marked in black enamel, and can be instantly set at zero, or to any desired starting number with the key which is sent with each counter. When the highest figure is reached it will repeat automatically.

No. 4.	Either Nickel Plated or Black Enameled	Counts to	10,000. ..	Price,	$ 8.00
" 5.	" " " " " "	"	100,000.	"	10.00
" 6.	" " " " " "	"	1,000,000.....	"	12.00

Number of Counter corresponds with number of figures.

"LIGHTNING" SPEED INDICATOR.



For Shafting.

It registers as high as 1,000, as seen by the cut, which is actual size. The body constitutes the handle. Has a rubber tip on the spindle, a silver-plated dial and the face covered with a watch crystal. Will stand over 15,000 rotations per minute.

Rubber Tipped Spindle gives greater adhesion, without slipping, than any hardened steel point.

To suit the requirements, we furnish spindle so as to give three lengths, 1, 2 and 3 inches for all practical purposes, this is believed to be sufficient; the spindle can however be made any desired length for special purposes.

Each.....$2.00

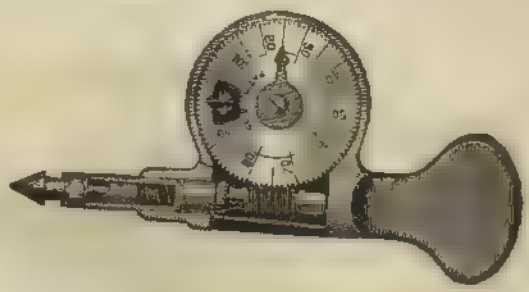
Montgomery & Co. will gladly send a discount sheet to this book and quote special prices. For the best Tools and lowest prices write Montgomery & Co., New York.

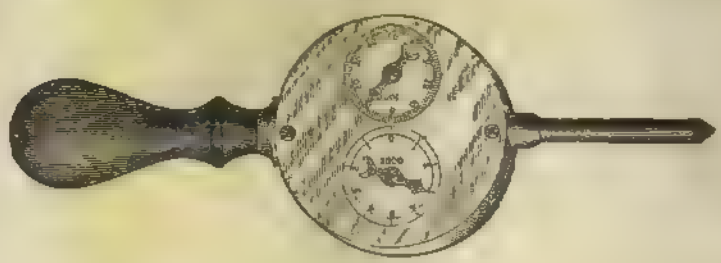
THE TABOR SPEED INDICATORS.

With Stop Motion.

This Indicator has two dials, one beneath the other, allowing of a continuous count of 5,000 revolutions. The stop motion prevents the moving of the dials until the proper moment.

Each.....$1.00 Postage.....4c.





DOUBLE DIAL SPEED INDICATORS.

Registering to 10,000 revolutions.

Each....$6.00 Postage....16c.

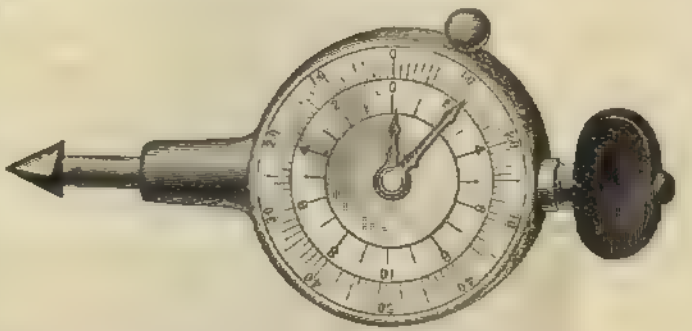
THE STANDARD SPEED COUNTERS.

On the Principle of a Stop Watch.

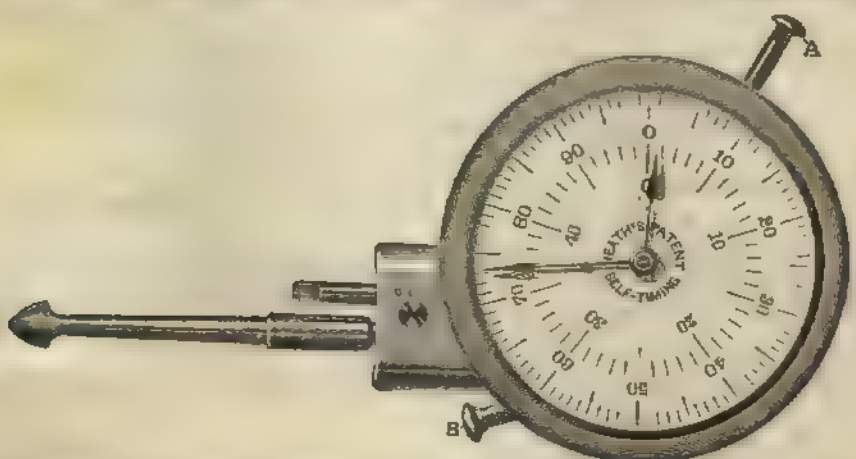
Registers 2,000 revolutions.

Each.....$5.00

Postage.....8c.



SELF-TIMING AND SELF-REGISTERING SPEED INDICATORS.



Specially adapted to Electric Motors and High Speed Engines. Just what is wanted for accurate speed taking.

Each $20.00

DOUBLE ALARM SPEED INDICATOR.

Back view.

Double Speed Alarm Indicator, counting right or left.

Each..... $1.50

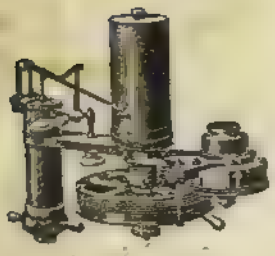
FULTON SINGLE SPEED INDICATOR.

Single Speed Indicator.

Each.....75c.

THE ROBERTSON-THOMPSON INDICATOR

and "Victor" Aluminum Reducing Wheel.



The most complete outfit for indicating any engine from 8 inches to 6 feet in stroke to 500 revolutions per minute

Guaranteed superior in design and convenience to any made and perfectly accurate.

Price, complete, with two springs, two cocks, book, cord cards and scales, in fine polished mahogany case..... $55.00

Without Victor Reducing Wheel..... 40.00

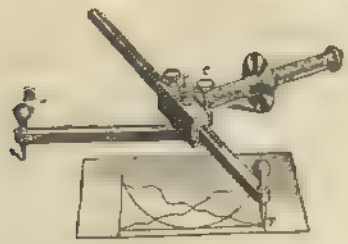
Our general description tells all about it and is worth more than it costs—a postal card.

STANDARD AVERAGING PLANIMETER.

Will give the mean effective pressure without computation or can be set to give a reading in square inches.

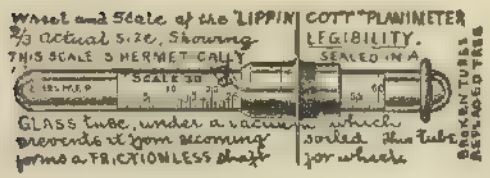
Complete in fine velvet lined case, with mahogany drawing board, with celluloid plate for wheel to travel on, and clips to hold card in place, price, $15.00

THE LIPPINCOTT PLANIMETER.



Three different scales are provided so that the M. E. P. may be read direct for any spring, without computation.

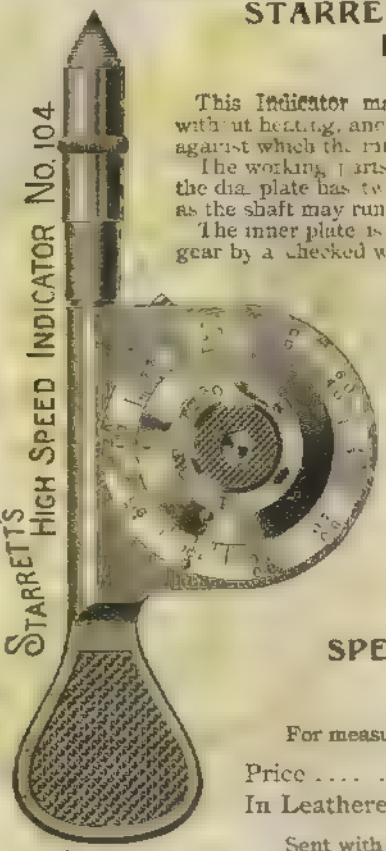
Price, complete.....$15.00



We carry a complete line of Wm. Smith & Son's Celebrated Music Wire. It is excellent for springs.

STARRETT'S HIGH SPEED INDICATOR.

No. 104.



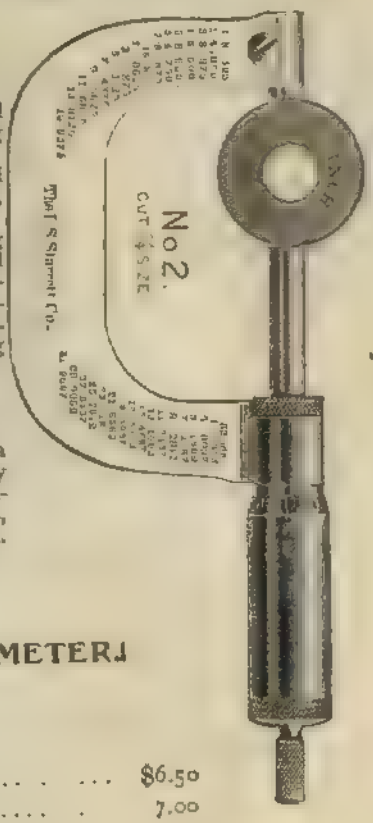
This Indicator may be run at highest speed required without heating, and this on account of friction bearing against which the inner end of the spindle revolves.

The working parts of this instrument are enclosed, and the dial plate has two rows of figures reading right or left, as the shaft may run.

The inner plate is frictionally clamped to the revolving gear by a checked wafer head-screw. By a pressure and twist with the thumb the plate is loosened, when the O mark may be instantly moved to agree with the starting point, thus saving time revolving the spindle to bring it there.

Price..... ..... $1 00
In Leatherette Case . 1.50

We supply the Indicators with a spindle 7½ in. long for use on Dairy Machines, etc., for 50c. extra. The Indicator in pasteboard box (list $1.00), will be sent unless otherwise ordered.



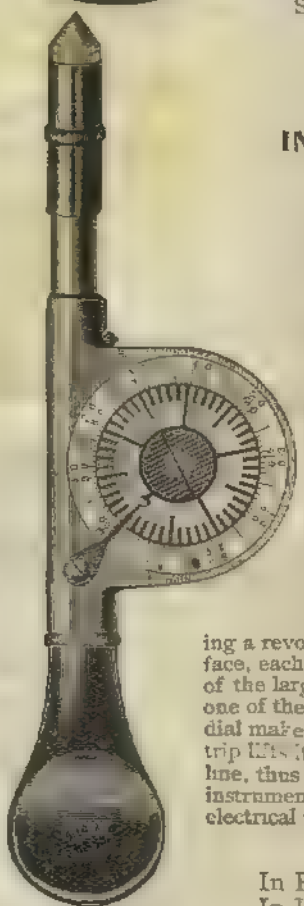
STARRETT'S SPEEDED SCREW MICROMETER.

No. 2.

For measurements from 1 in. to 2 in.

Price $6.50
In Leatherette Case, ... 7.00

Sent with case unless otherwise ordered.



No 10".

STARRETT'S IMPROVED SPEED INDICATOR.

No. 106.

The instrument is nickel-plated, and has a rosewood handle, so that it will not heat the fingers when run at high speed. Has rubber tips for both pointed and hollow centers.

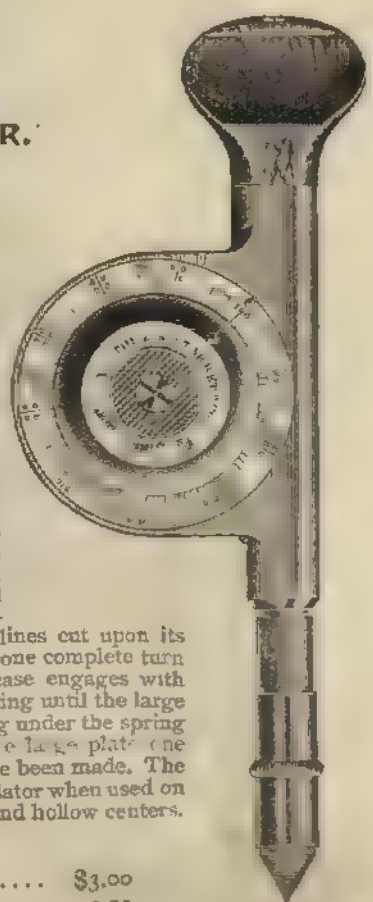
PRICES:

In Pasteboard Box..... $1.50
In Leatherette Case..... 2.00

STARRETT'S REGISTERING SPEED INDICATOR.

No. 107.

This instrument was devised to automatically register hundreds as well as units and tens, and thus relieve the mind from keeping tally; also to furnish a better registering indicator at a more reasonable cost than heretofore. The instrument will register 5,000 revolutions. The large dial is graduated into 100 lines, each one representing a revolution of the spindle. The small dial has 50 lines cut upon its face, each representing 100 revolutions of the spindle (or one complete turn of the large dial). A spring finger trip attached to the case engages with one of the lines in the small dial, and holds it from revolving until the large dial makes one complete turn, when the trip pin passing under the spring trip lifts it, and the dial is frictionally carried ahead to the next line, thus showing that 100 revolutions of the spindle have been made. The instrument has a hard rubber handle, making a safe insulator when used on electrical machinery. Has rubber tips for both pointed and hollow centers.

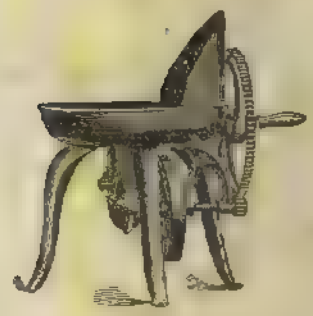


No .00.

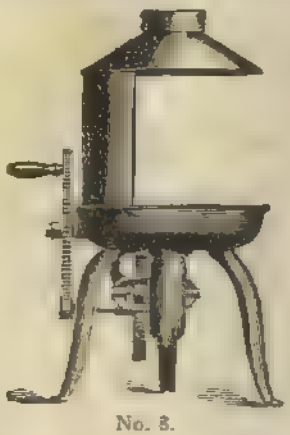
PRICES:

In Pasteboard Box..... ..... $3.00
In Leatherette Case 3.50

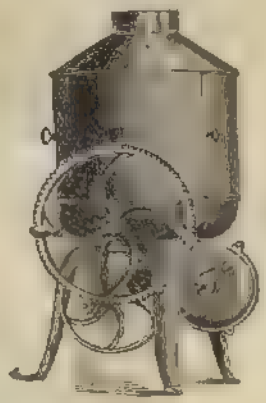
BUFFALO PORTABLE FORGES.



No. 7



No. 8.

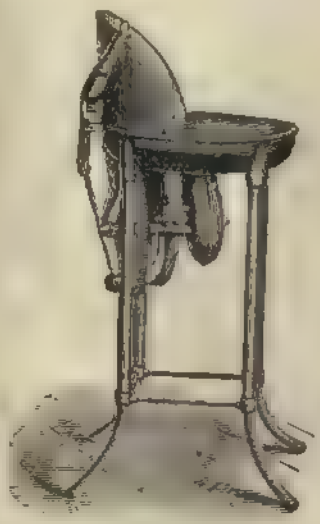


No. 7

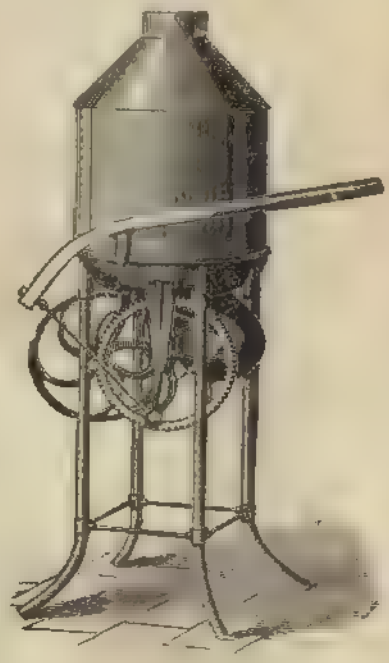
These Forges are especially intended for light work. Being very compact and light, they can be easily moved about. They have short legs; so, when used, they are to be set on a box or bench, and will produce a welding heat on one-inch iron in ten minutes.

Nos.	7	8	9
Height, inches,	15	15	15
Hearth, diameter, "	15	15	15
Fan, "	6	6	6
Weight, pounds,	40	50	55
Each	$16.00	18.00	20.00

No. 4.



No. 5.

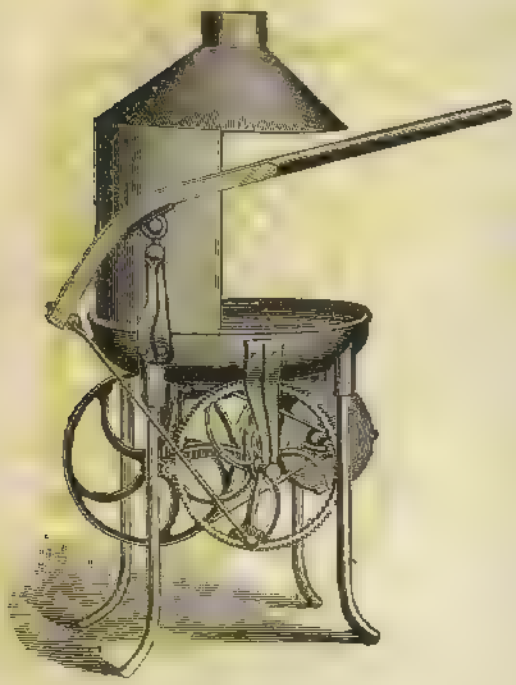


No. 6.

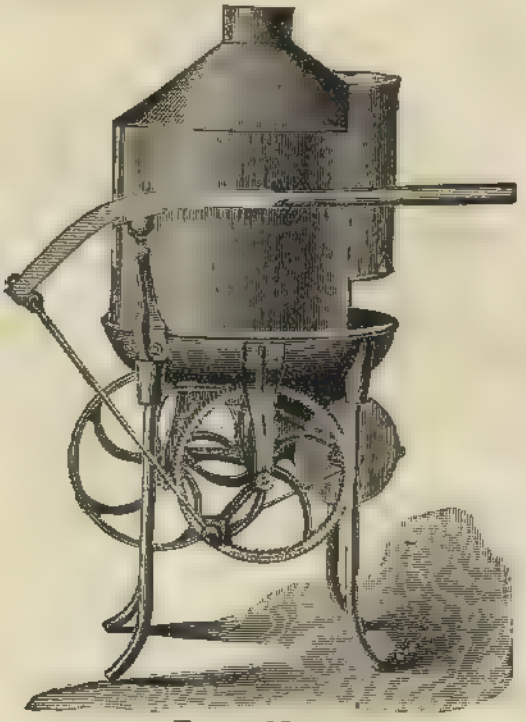
Forges Nos. 4, 5 and 6 will produce a welding heat on iron 1¼ inches diameter in five minutes. These Forges are peculiarly adapted for use of die sinkers, model makers, plumbers, tinsmiths, jewelers, dentists, locksmiths, and small hardware manufacturers, for heating and tempering tools of all kinds

Nos.	4	5	6
Height, inches,	33	33	33
Hearth, diameter, "	18	18	18
Weight, pounds,	75	70	80
Each	$27.00	24.00	30.00

BUFFALO PORTABLE FORGES.—CONTINUED.

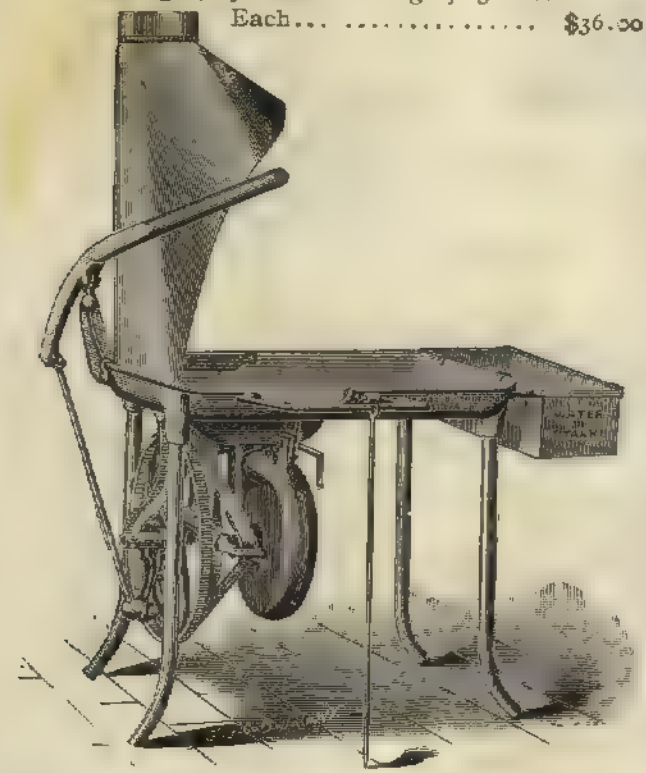


Forge No. 1.
Fan, 10 inches. Hearth, 21x27 inches.
Height, 29 inches. Weight, 140 lbs.
Each.....$40.00



Forge No. 2.
Fan, 10 inches. Hearth, 21x27 inches.
Height, 29 inches. Weight, 150 lbs.
Each.....$42.00

Forge No. 3.
Fan, 10 inches. Hearth, 21x27 inches.
Height, 29 inches. Weight, 130 lbs.
Each..... $36.00

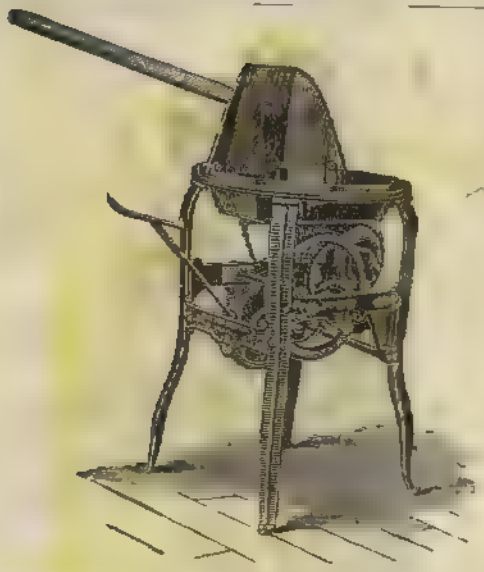


No. O Forge.

This forge is guaranteed to produce a welding heat on 3-inch iron in 5 minutes, and on 4-inch iron in 10 minutes. We defy anyone to produce its equal. Sold only on guaranteed merit.

No progressive blacksmith or metal worker in the country will fail to see at once the immense superiority of our No. 0 Forge to the Bellows and Brick Forge, for the following reasons: It heats quicker with less labor, costs less, and is more durable and reliable in every respect.

Height, 30 in.; size of hearth, 28 x 40 in.; fan, 14-in. diameter; weight, 250 lbs.; with water tank, 300 lbs. Price, No. 0, $50.00; with water tank, $4.00 extra



EMPIRE PORTABLE FORGES.

Without Hood.

Cast-iron legs and back. Very solid and durable.

No. 1.

Fan, 8 in ; diam , 25 .. ; height, 42 in ; weight, 140 lbs

Each.....$35 00

No. 2.

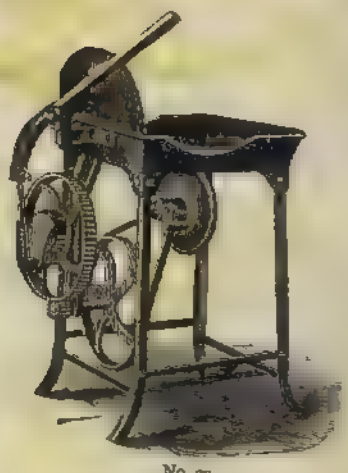
Fan, 10 in.: diam , 27 in ; height, 45 in ; weight, 230 lbs.

Each.....$45.00

WESTERN FORGES.

No. 20.

Without Hood. With Angle-Iron Legs.



No. 20.

Fan, 7 in.; size, 15x19 in.; height, 33 in.; weight, 95 lbs. Lever handles, angle-iron legs, deep fire pans, Babbitted bearings. Making them easily worked, very strong, and quickly repaired They are made with ratchet, giving a positive forward motion without dead centers.

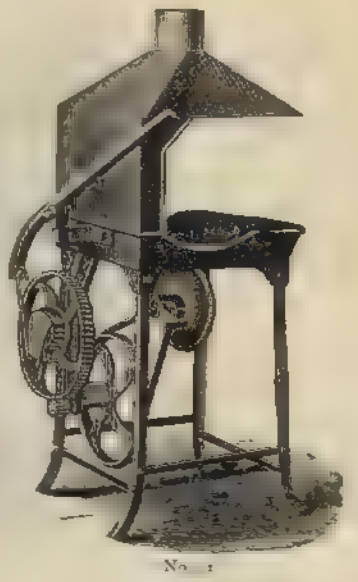
Each.....$22.00

No. 21.

With Hood. With Angle-Iron Legs.

Fan, 7 in.; size, 15x19 in.; height, 55 in.; weight, 115 lbs. Lever handles, angle-iron legs, deep fire pans, Babbitted bearings. Making them easily worked, very strong, and quickly repaired. They are made with ratchet, giving a positive forward motion without dead centers.

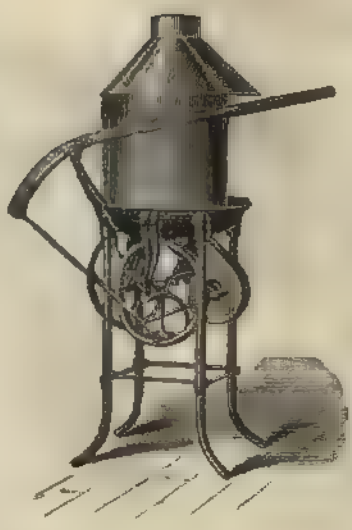
Each.....$24.00



No. 1

WESTERN PORTABLE FORGES.

All with Pipe Legs and Belts.



No. 34. With half hood. Height, 33 in.; fire pan, 18 in. in diam.; weight, 75 lbs.

Each.....$27.00

No. 35. Same as above, without hood.....each, $24.00

No. 36. Same as above, with closed hood....each, $30.00

No. 31. With half hood. Height, 26 in.; fan, 10 in.; fire pan, 21x27 in.; weight, 145 lbs.

Each.....$40.00

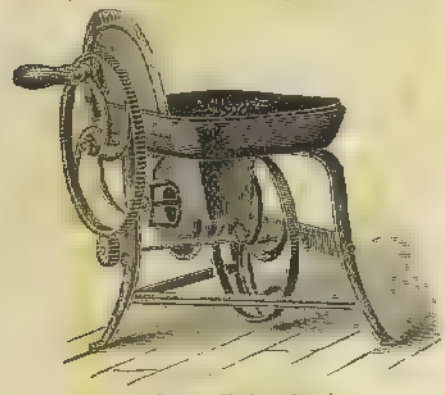
No. 32. Same as above, with closed hood....each, $42.00

No. 33. Same as above, without hood.....each, $36.00

EMPIRE PORTABLE FORGES.

No. 12. Without Hood.

Fan, 7 in ; size, 12x17 in.; height, 15 in.; weight, 50 lbs, $16.00

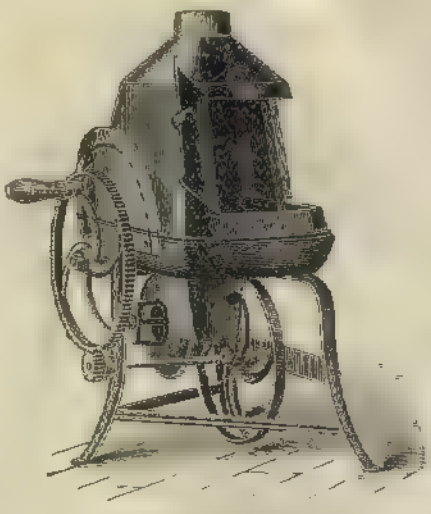


No. 12. Without Hood.

No. 12. With Cast-Iron Hood.

Fan, 7 in ; size, 12x17 in.; height, 28 in ; weight, 70 lbs.

Each.....$20.00



No. 12. With Cast-Iron Hood.

For Machine Shops, Blacksmiths' and Jewelers' Use.

Cast-iron legs and hood. Very solid and durable, and as safe from fire as a stove. With hood.

No. 0. Fan, 8 in.; diam., 22 in.; height, 46 in.; weight, 160 lbs.....each, $35.00

No. 1. Fan, 8 in.; diam., 25 in.; height, 48 in.; weight, 170 lbs.....each, 40.00

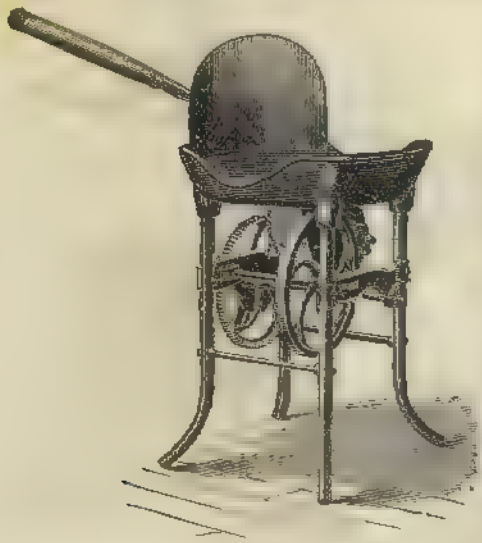
No. 2. Fan, 10 in.; diam., 27 in.; height, 51 in.; weight, 270 lbs.....each, 50.00

Arranged for power; weight, 290 lbs..... " 55.00

No. 3. Fan, 10 in.; diam., 31 in.; height, 54 in.; weight, 285 lbs.....each, 60.00

Arranged for power; weight, 300 lbs..... " 65.00

For Bridge, Boiler, and Railroad Work.



Without Hood.

No. 10.

Without hood, pipe legs, swivel handle.

Fire pan, 17 x 19 in height, 20 in , fan 8 in., weight, 90 lbs.

Each.....$27.00

With hood, weight, 110 lbs..... 30.00

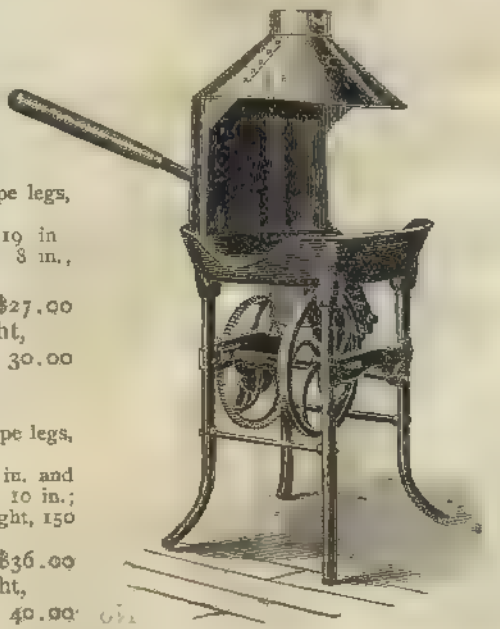
No. 9.

Without hood, pipe legs, swivel handle

Fire pan, 21x27 in. and 5½ in deep; fan, 10 in.; height, 29 in.; weight, 150 lbs.

Each.....$36.00

With hood, weight, 160 lbs..... 40.00



With Hood.

With iron fire ring around tuyere, $1.00 extra.

DUCK-NEST TUYERES.

This cut represents the oldest Tuyere Iron in the market, and has been so long used by blacksmiths that commendations are unnecessary.

Each.....$2.00

WESTERN TUYERE IRONS.

With revolving center, for cleaning fire or changing size and direction of blast.

Each..... $2.00

EMPIRE ADJUSTABLE TUYERES.

This Tuyere is rendered adjustable by the action of a rod connected with the arbor supporting the valve, which closes or opens it to any desired extent, without disturbing the fire enabling the operator to adjust it without labor or delay.

This Tuyere does not need to be cleaned more than once or twice a month.

Each.....$3.50

FORGES.

For Blacksmiths, Wagon Makers, Machinists, Tinsmiths, Locksmiths, Plumbers, Jewelers, Farmers, and all branches of mechanical industry. These Forges are durable, economize room, save time and coal are noiseless, without cogs, ratchets, or gears, and have no dead center to overcome.

No. 3B.—Height, 33 inches, hearth, 18½ inches diameter, weight, 92 lbs. No hood.
Each.....$24.00

No. 3A. Height, 33 in., hearth, 18½ in. diameter, weight, 98 lbs. Half-open Hood as No. 8.
Each.....$27.00

No. 3C.—Forge No. 3 has the same capacity as No. 2, and has a full hood with sliding door running half the distance around the pan. When closed no fire or smoke can escape. The legs are ¾ in. gas pipe, with strong iron braces. Weight, 105 lbs.
Each.....$30.00

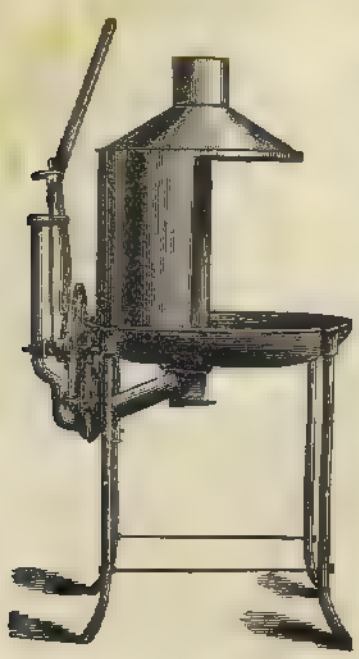
No. 2B.—Height, 34 inches, hearth, 21 x 27 inches, weight, 130 lbs. No hood.
Each.....$36.00

No. 2A.—Height, 34 inches, hearth, 21 x 27 inches, weight, 135 lbs. Half-open hood.
Each.....$40.00

No. 2C.—Height, 34 inches, hearth, 21 x 27 inches, weight, 140 lbs. Closed hood, with large door in front, which, when shut, prevents the escape of fire and smoke.
Each.....$42.00

No. 3 Forge.

THE AMERICAN PORTABLE FORGE.



No. 8 Forge.

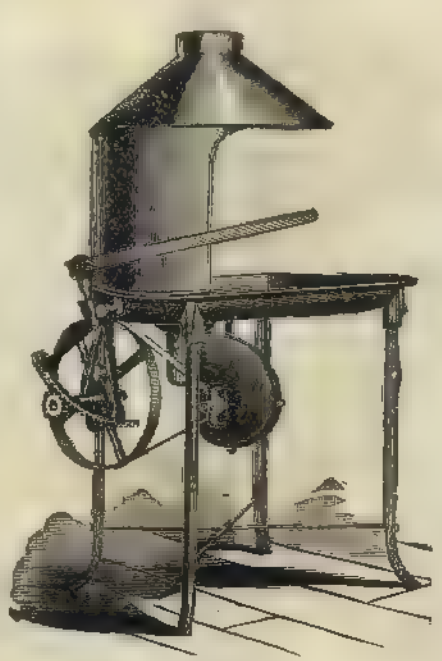
It is made with the same care as modern Machine Tools. Shafts are of Steel, with generous bearings. Body and Frame are strong and light. Legs of 1¼ x 1¼ Angle iron, well braced. Stands firm on its legs and stiff. Hood heavy and substantial. Handle pivoted to frame and worked the same as an ordinary blacksmith's bellows. Driven by a noiseless clutch, on which dirt, sand, grease or water have no effect, and which will last for years. The only forge that will give as strong a blast as a blacksmith forge and bellows, and it takes only one-fourth of the power to do it. Blast continuous. A first-class tool

Size of Bed or Pan, 20 x 30 in.; 3 in. deep. Fan, 10 in. diameter, *perfectly noiseless*. Height to top of Pan, 33 in.; over all, 58 in. Weight, complete, 115 lbs.

Complete.....$18 00

Also the AMERICAN Rivet Forge for Boiler Makers, Bridge Builders, etc.

Each.....$20.00



The American Portable Forge.

VULCAN PORTABLE FORGES.

THE VULCAN FORGE is compact, strong, simple and durable. It is almost noiseless in its operation, and gives not only a very powerful blast, but a continuous blast as well. In the construction is so arranged as to allow the fan to rapidly revolve for some time after all work has stopped on lever handle, thus allowing time to change tools, or prepare for a weld, without the fire deadening down or cooling off, as seen in all other forges, which have no continuous blast. Another point: Very little exertion is necessary to carry a high rate of speed and heavy blast. A few quick strokes on the handle and the blast is attained, which thereafter is held and maintained by leisurely strokes. A great improvement over the old style forges, in which it not only takes quick strokes to get a blast, but a continuation of unbroken quick strokes to attain a welding heat.

In this forge is also found the only true swivel movement ever put on a forge. The handle does not have to be worked like a pump, but instead it has the easy swaging motion of the bellows handle, so dear to the heart of every blacksmith. The blast is attained by a combination of durable clutches acting upon both driving wheel and belt wheel at the same time.

The attention of the trade is called to the mechanical work in our forges. The legs and brace-rods are of wrought iron, the journals of hard steel, and all bearings babbitted. The working parts are under the forge pan and protected from cinders or danger of breakage and it is impossible to revolve the fan backward. The above advantages will commend the Vulcan Forge to all careful buyers.

Manufacturers' Forge.

VULCAN MINERS' BENCH FORGES.

For Miners, Prospectors and Jewelers.

No. 1	Forge, with Back	$18.00
" 2	" " Hood	20.00
" 3	" " Closed Hood	22.00

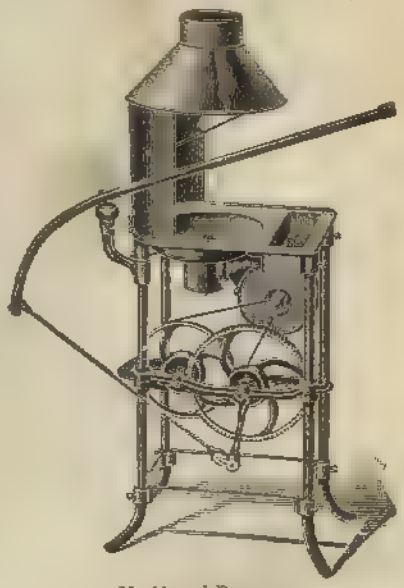
Fire Pan, 15 inches diameter. Height of Forge, 16 inches. Weight of Forge, 55 pounds. Welding capacity 1 inch iron.

VULCAN MANUFACTURERS' FORGES.

For Plumbers, Tinsmiths and Light Manufacturing.

No. 4	Forge, with Back	$30.00
" 5	" " Hood	32.00
" 6	" " Closed Hood	35.00

Fire Pan, 15 x 20 ins.
Height of Forge, 33 "
Weight of Forge, 85 lbs.
Welding capacity, 2 inch iron.



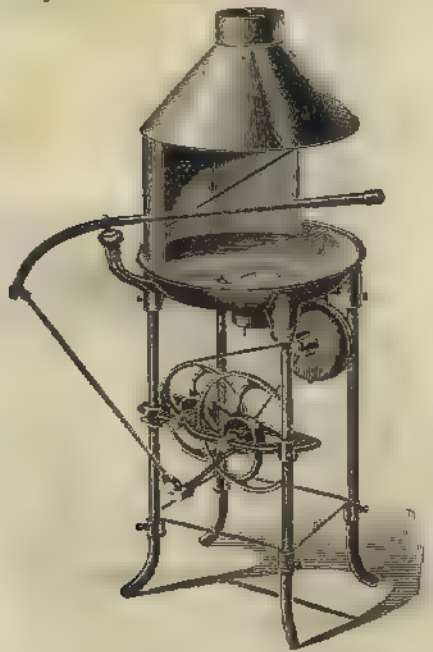
Machinists' Forge.

VULCAN MACHINISTS' FORGES.

For Machinists, Model Makers and Manufacturers.

No. 7	Forge, with Back	$33.00
" 8	" " Hood	36.00
" 9	Riveting Forge, with Ring	37.00
" 10	Forge, with Closed Hood	39.00

Fire Pan, 10 x 21 inches. Height of Forge, 33 inches. Weight of Forge, 100 pounds. Welding capacity, 2½ inch iron.



Tool-Makers' Forge.

VULCAN TOOL MAKERS' FORGES.

For Tool Makers, Pattern Makers and Bridge Builders.

No. 11	Forge, with Back	$40.00
" 12	" " Hood	43.00
" 13	" " Closed Hood	46.00

Fire Pan, 22 inches diameter. Height of Forge, 33 inches. Weight of Forge, 125 pounds. Welding capacity, 3 inch iron.

VULCAN BLACKSMITH AND RAILROAD FORGES.

For Railroads, Boiler Makers and Blacksmiths.

No. 14	Forge, with Back	$48.00
" 15	" " Hood	50.00
" 16	" " Closed Hood	52.00

Fire Pan, 22 x 28 inches. Height of Forge, 33 inches. Weight of Forge, 150 pounds. Welding capacity, 3½ inch iron.

BEVELED EDGE LONG THIN PARING CHISELS.

With special applewood handles, and ground sharp ready for use. The 1 inch is 8½ inches long.

Inches	⅛	3/16	¼	5/16	⅜	½	5/8	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2
Per dozen	$7 20	7 20	7 30	7 35	7 50	8 10	8 50	8 70	9 85	11 50	12 70	13 75	14 50	17.10	19 65	
In sets of 9,	⅛ to 1½ inches,															$7.30
" " 12,	⅛ to 2 "															11.25

COACHMAKERS' SOCKET FIRMER CHISELS.

Extra Quality Cast Steel.

The 1 inch is 9⅝ inches long in blade.

Inches	⅛	3/16	¼	5/16	⅜	½	5/8	¾	⅞	1	1¼	1½	1¾	2
Per dozen	$5 00	7 40	7 7	8 10	8.50	9.25	10.00	10.70	11 25	12 00	13 00	14 00		
In sets of 8,	⅛ to ½	inches,												$6 60
" " 9,	⅛ to ¾	"						1	1¼	1½				6.85
" " 12,	⅛ to 2	"												9.70

SOCKET FIRMER CHISELS.

Extra Quality Cast Steel.—Beveled Edges.

Inches	⅛	3/16	¼	5/16	⅜	½	5/8	¾	⅞	1	1⅛	1¼	1½	1¾	2
Per dozen	$6 35	6 45	6 55	6 65	6 80	7 25	7 65	8.10	8.70	9.25	10.00	10.70	11.50	13.40	14.60	
In sets of 8,	⅛ to ½	inches,														$6.50
" " 9,	⅛ to ¾	"						1	1¼	1½						6.50
" " 12,	⅛ to 1¼	"														9.25

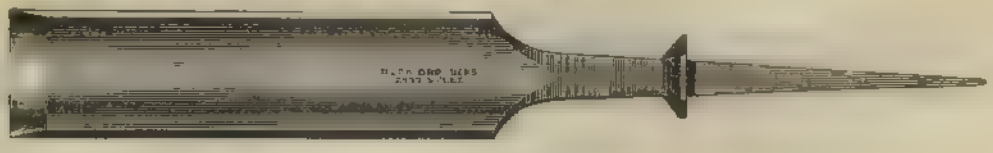
FIRMER GOUGES.

Extra Quality Cast Steel.

(OUTSIDE BEVEL.)

The 1 inch is 8½ inches long from bolster to point.

Inches	1/16	3/32	⅛	5/32	3/16	¼	5/16	⅜	½	5/8	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2
Per dozen	$2 00	2 00	2 00	2 05	2 15	2 35	2 45	2.65	2.90	3.30	3.50	4.30	4 90	5.25	6.00	7.30	9.00		
In sets of 9,	⅛	¼	⅜	½	⅝	¾	1	1¼	1½										$2.60
" " 12,	⅛	¼	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2							4.15



(INSIDE BEVEL.)

The 1 inch is 8½ inches long from bolster to point.

Inches	1/16	3/32	⅛	5/32	3/16	¼	5/16	⅜	½	5/8	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2
Per dozen	$2.20	2.20	2.25	2 30	2 45	2 60	2.70	2.90	3.15	3.55	3.75	4 60	5.15	5.55	6.30	7.65	9 35		
In sets of 9,	⅛	¼	⅜	½	⅝	¾	1	1¼	1½										$2.90
" " 12,	⅛	¼	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2							4.45

LONG THIN PARING CHISELS.

Extra Cast Steel.

The 1 inch is 8¾ inches long from the bolster.

Inches	1/16	3/32	⅛	5/32	3/16	¼	5/16	⅜	½	5/8	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2
Per dozen	$2 80	2.80	2.80	2.90	2.90	3 20	3 55	4 00	4 30	5.25	6 00	7.15	7 70	8 60	10 15	12.50			
In sets of 9,	⅛	¼	⅜	½	⅝	¾	1	1¼	1½										$3.55
" " 12,	⅛	¼	⅜	½	⅝	¾	⅞	1	1¼	1⅜	1¾	2							5.80

MILLWRIGHTS' SOCKET FIRMER GOUGES.

Inches	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2
Per dozen	$10.50	11.00	11.50	12.25	13.50	14 40	15 50	16 75	18 00	20 00	22.25	24.50

In sets of 8, ¼ to 2 inch.....$11.00 | In sets of 12, ⅜ to 2 inch.....$16.00

SOCKET MORTISE CHISELS.

Inches	⅜	½	⅝	¾
Per dozen	$7.50	8 00	8.50	8 80	9.25	9.75	10.30	11 00	12 00	13 40

The Blades of these Chisels are solid steel and the barrels are heavier than the socket firmer barrels. They are very desirable for coachmakers, boat builders, or for light mortising. The Socket Mortise Chisels are adapted for the heavier kind of work. If ground sharp, 40 cents per dozen extra.

HANDLED FIRMER GOUGES.

Extra Quality Cast Steel—Ground Sharp and Honed.

The 1 inch measures 5½ inches long from bolster to point.

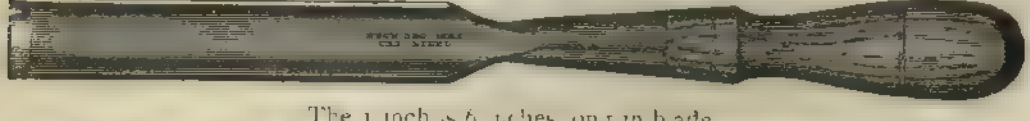
Inches	⅛	¼	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2
Per doz	$3 15	3.20	3 30	3.45	3.60	3.85	4.10	4.45	4.90	5.10	6.35	6.70	8.00	9.45	11.20
In sets of 9,	⅛	¼	⅜	½	⅝	¾	1	1¼	1½	.....	$4.00
" " 12,	1	4	3	.	.	¼	⅜	1	1¼	1½	2	.	.	.	.	5 80

SOCKET FIRMER GOUGES.

Extra Quality Cast Steel—Outside Bevel.

Inches	⅛	¼	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2
Per doz.	$5 20	5.40	5 50	5 75	5.90	6 30	6 75	7.40	8 10	8.50	9.20	9 50	10.00	11.05	13 15
In sets of 8,	¼	⅜	½	¾	1	1¼	1½	2	.....	$5 80
" " 9,	⅛	¼	⅜	½	⅝	¾	1	1¼	1½	.....	5.70
" " 12,	⅛	¼	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2.	.	.	.	8.20

Extra Quality Cast Steel Inside Bevel.



The 1 inch is 6 inches long in blade.

Inches	⅛	¼	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2
Per doz.	$5 55	5 75	5 95	6.25	6.35	6.75	7.15	7.75	8 55	8 95	9.65	10 05	11 15	12 30	13 80
In sets of 8,	¼	⅜	½	¾	1	1¼	1½	2	.....	$6 35
" " 9,	⅛	¼	⅜	½	⅝	¾	1	1¼	1½	.....	6 20
" " 12,	⅛	¼	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2.	.	.	.	8 75

CORNER CHISELS.

Extra Quality Cast Steel—8 inch Blade.

Inches	¾	⅞	1	1⅛	1¼
Per dozen	$16 00	17.00	18.25	19.00	20.25

WOOD TURNING PARTING TOOLS.

The ½ inch wide measures 8½ inches over all.

Inches	½	⅝	¾
Per dozen	$4 50	5.00	5 50

LONG, THIN PARING GOUGES.

Extra Cast Steel.

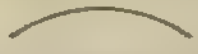
The 1 inch is 8 inches from the bolster.

Inches	⅛	3/16	¼	5/16	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2
Per doz	$4.65	4 65	4 70	4 80	4 80	5 10	5 40	5 50	6 15	7 15	8 25	9 35	10.90	13.15	15.60
In sets of 9,	⅛	¼	3/16	⅜	⅝	¾	1	1¼	1½						$5 15
" " 12,	⅛	¼	3/16	⅜	⅝	¾	⅞	1	1⅛	1¼	2				6 00

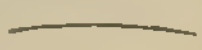
Unless otherwise ordered, we always send Middle Sweep.

Regular Sweep.

Middle Sweep.

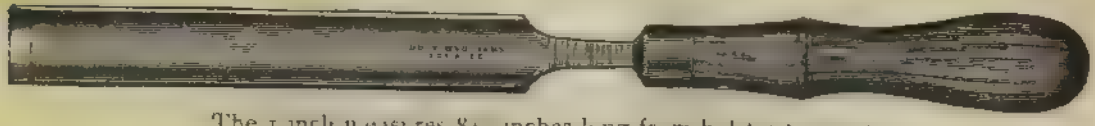


Flat Sweep.



HANDLE PARING GOUGES.

Extra Quality Cast Steel.—Ground Sharp.



The 1 inch measures 8½ inches long from bolster to point.

Inches	3/16	¼	5/16	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2
Per doz.	$6.20	6.25	6.35	6.65	6 85	7 40	7 90	8 25	9.25	10.50	11.65	13.40	16.00	18.40	
In sets of 9,	⅜	¼	5/16	⅜	½	⅝	¾	1	1¼	1½					$6.85
" " 12,	⅜	¼	5/16	⅜	½	⅝	¾	1	1¼	1½	1¾	2			10.15

SOCKET PARING GOUGES.

All sizes 8 inch Blades.

Inches	⅛	¼	3/16	⅜	5/16	½	⅝	¾	⅞	1	1¼	1½	1¾	2
Per doz.	$7 00	7.25	8 00	8 75	9 50	10 40	11.00	12.00	13.50	15.00	16.00	17.40		
In sets of 8,	¼	⅜	½	¾	1	1½	1½	2						$8.00
" " 9,	⅛	¼	⅜	½	⅝	¾	1	1¼	1½					7 80
" " 12,	⅛	¼	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2		11.50

SOCKET FRAMING CHISELS.

Extra Quality Cast Steel.

7 to 8 inch Blades.

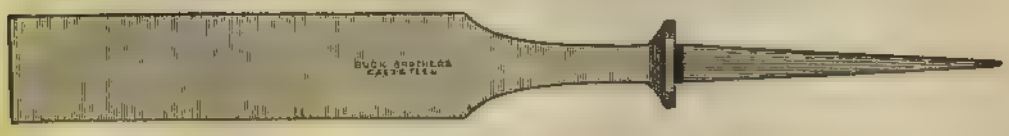
Inches	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1	1¼	1½	1¾	2
Per doz.	$6.00	6.25	6 40	6 50	6.60	6 75	7 25	7 50	8.00	9 00	10.00	11.00	12.00
In sets of 9	¼	⅜	½	¾	1	1¼	1½	1¾	2				$6 50
" " 12	¼	5/16	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2	7 75

BUCK BROTHERS' CELEBRATED CHISELS,

Every tool fully guaranteed.

FIRMER CHISELS.

Extra Quality Cast Steel.



The 1 inch is 5½ inches long from bolster to point

Inches	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2
Per dozen	$1 60	1.60	1.60	1.60	1.65	1.80	2 00	2 10	2 25	2 45	2 80	3 00	3.75	4.10	4.50	5.10	6.20	7.50
In sets of 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2									$2.20
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2						3.50

Extra Quality Cast Steel. Beveled Edge.

The 1 inch is 5½ inches long from bolster to point

Inches	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2
Per dozen	$3.80	3 80	3 80	3 85	3 90	4 00	4.20	4.40	4.60	4 75	5 00	5 40	6 80	7 15	7 60	8.25	10.40	12.00
In sets of 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2									$4 10
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2						6.40

PARING CHISELS.

Extra Quality Cast Steel—Beveled Edge.

The 1 inch is 8½ inches long from bolster to point.

Inches	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2
Per dozen	$5 75	5.80	5 90	6 00	6 00	6 15	6.50	6 90	7 30	8.20	9.75	10.90	11.50	12 40	14 80	17.40
In sets of 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2							$6.00
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2				9.50

HANDLED FIRMER CHISELS.

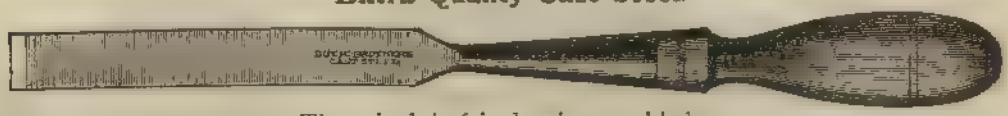
Extra Quality Cast Steel.—Ground sharp and honed.

The 1 inch is 5½ inches long in blade.

Inches	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2
Per dozen	$2 50	2 55	2.60	2 70	2.85	3 15	3 40	3.70	4.10	4.30	5.20	5 60	6.70	8.00	9.40	
In sets of 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2							$3 20
" " 9,	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2							3.75
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2				4.80

SOCKET FIRMER CHISELS.

Extra Quality Cast Steel.



The 1 inch is 6 inches long in blade

Inches	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
Per dozen	$4.00	4 15	4 20	4 40	4 50	4 80	5 25	5 60	6.25	6 60	7 25	7 40	8.20	9 00	10.00
In sets of 8,	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2							$4.30
" " 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2						4 30
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2			6.00

TURNING CHISELS.

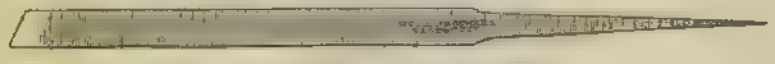
Extra Cast Steel.

The 1 inch is 10¼ inches over all.

Inches	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1¼	1½	1¾	2
Per doz	$2.20	2.25	2.25	2.40	2.45	2.7	3.00	3.40	3.70	4.35	5.40	7.00	8.40	10.00
In sets of 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1¼	1½					$3.00
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1¼	1½	1¾	2		4.90

EXTRA LONG AND STRONG TURNING CHISELS.

Extra Cast Steel.



The 1 inch wide measures 13 inches long over all

Inches	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1¼	1½	1¾	2
Per doz	$4.10	4.15	4.30	4.50	4.85	5.40	5.80	6.75	8.25	10.50	13.50	16.75
In sets of 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1¼	1½			$5.00
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1¼	1½	1¾	2		7.75

TURNING GOUGES.

Extra Cast Steel.

The 1 inch is 10¼ inches over all.

Inches	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1¼	1½	1¾	2
Per doz	$2.90	2.90	2.90	3.15	3.30	3.95	3.95	4.60	5.25	5.90	7.70	10.00	11.80	14.50
In sets of 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1¼	1½					$4.00
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1¼	1½	1¾	2		6.70

EXTRA LONG AND STRONG TURNING GOUGES.

Extra Cast Steel.

The 1 inch wide measures 13 inches long over all.

Inches	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1¼	1½	1¾	2
Per doz	$5.70	5.80	6.00	7.00	7.70	8.75	10.10	11.10	13.50	16.90	18.75	21.50
In sets of 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1¼	1½			$7.30
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1¼	1½	1¾	2		11.40

CARPENTERS' SLICKS.

Inches	2½	3	3½	4
Per dozen	$21.00	23.50	27.50	32.00

If ground sharp, 60 cents per dozen extra. Net Cash.

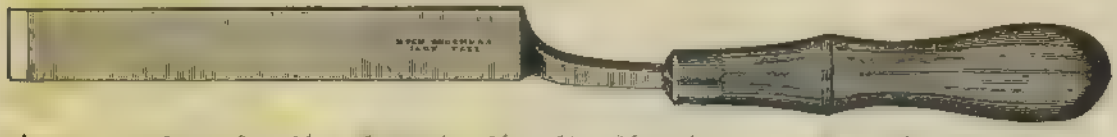
HANDLED PARING CHISELS.

Ground Sharp and Honed.

The 1 inch measures 8½ inches long from bolster to point

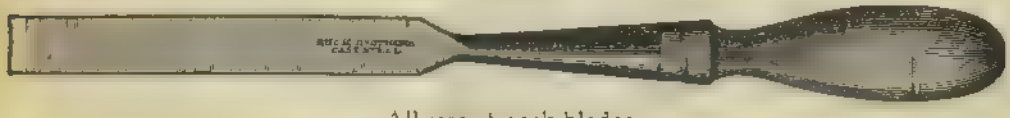
Inches	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	2
Per dozen	$3.85	3.90	4.00	4.15	4.25	4.45	5.00	5.50	5.90	6.85	7.75	8.90	10.60	12.25	14.70	
In sets of 6,	1/4	1/2	3/4	1	1 1/4	1 1/2										$3.60
" " 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/2	1 1/2							4.75
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2					7.45

Bent Shanks.



Inches	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	2
Per dozen	$5.25	5.50	5.65	5.95	6.00	6.30	7.20	7.90	8.50	10.00	11.25	12.90	15.55	18.00	21.60	
In sets of 6,	1/4	1/2	3/4	1	1 1/4	1 1/2										$5.20
" " 9,	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/2	1 1/2							7.20
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2				10.80

SOCKET PARING CHISELS.



All sizes 8 inch blades.

Inches	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2
Per dozen	$5.60	5.85	6.25	6.75	7.40	8.25	8.70	9.20	10.35	11.25	12.40	14.00
In sets of 6,	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2				$6.25
" " 9,	1/4	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2			5.50
" " 12,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2				8.75

BEVELED EDGE FIRMER CHISELS.

Handled with special Apple-wood Handles, and ground sharp.

Inches	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
Per dozen	$4.70	4.70	4.80	4.85	5.00	5.10	5.30	5.45	5.80
Inches	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2
Per dozen	$6.05	6.25	6.70	8.25	8.75	9.40	9.90	12.35	13.90

In sets of 9, 1/8 to 1 1/2 inch . . . . . $5.00 | In sets of 12, 1/8 to 2 inch $7.75

MILLWRIGHTS' SOCKET FIRMER CHISELS.

Inches	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2
Per dozen	$8.30	8.60	9.00	9.75	10.70	11.60	12.60	13.40	14.75	16.00	17.50	19.50

In sets of 8, 1/4 to 2 inch . . . . . $8.75 | In sets of 12, 1/8 to 2 inch $12.25

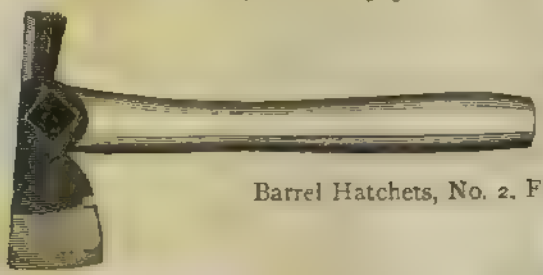
Blades of above 8 inches long; can furnish them 10 or 12 inches long when desired.

SHINGLING HATCHETS.

Nos.	1	2	3
Width of Cut, inch,	3½	3⅞	4⅜
Per dozen	$8.00	8.50	9.00

CLAW OR CASE HATCHETS.

Nos.	1	2	3
Width of Cut, inch,	3½	3⅞	4⅜
Per dozen	$9.00	9.50	10.00



LATHING HATCHETS.

Nos.	1	2	3
Width of Cut, inches	2½	2¾	3
Per dozen	$8.00	8.50	9.00

Half Hatchets, same list as Lath.

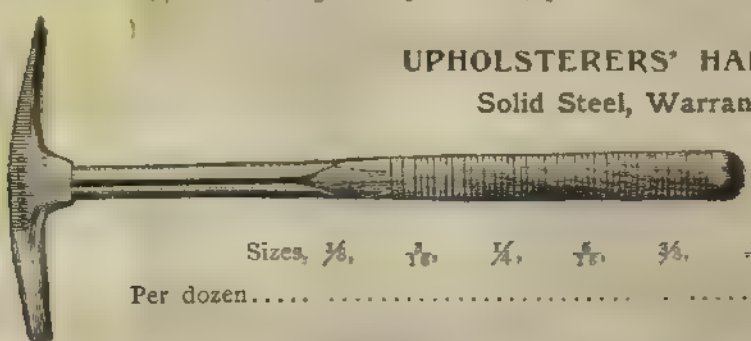
Barrel Hatchets, No. 2. Full Polished.....per dozen, $9.00

HUNTERS' HATCHETS.

Per dozen.....$9.50

BROAD HATCHETS.

Nos.	2	3	4	5	6	7	8	9
Width of Cut, inches	4½	5	5½	6	6¾	7½	8¼	9
Per dozen	$11.50	13.00	14.50	16.00	18.00	19 50	22.00	24.00



UPHOLSTERERS' HAMMERS.

Solid Steel, Warranted.

Sizes, ⅜, 7/16, ¼, 5/16, ⅜, 7/16, ½, ⅝, 5/8,

Per dozen.....$18.75

RAW-HIDE BOUND MALLETS.

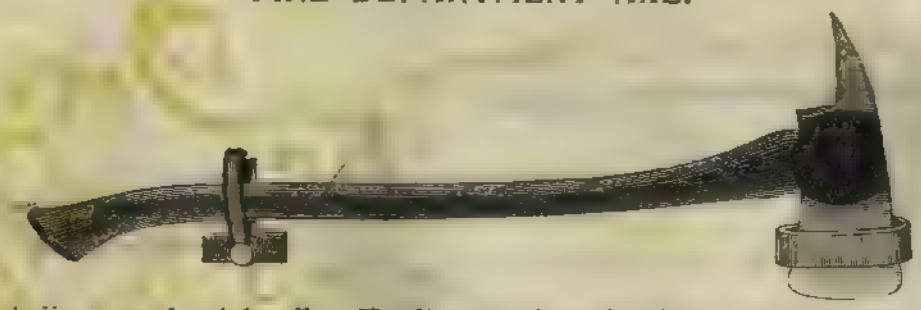
The most durable, finest finished and handsomest made. Positively will not split. The raw-hide binding has all the desirable qualities and none of the objectionable features of iron ferrules, while the spring of the hide facing cushions the blow and prevents jarring, greatly relieving the arm of the user. The universal use of our New Process Raw-Hide for highest speed Gearing is sufficient evidence of its strength and durability.

2	inch Face	per dozen, $7.00
2½	" "	" 9.00
3	" "	" 11.00

RAW-HIDE BOUND CHISEL HANDLES.

No. 200,	Tanged Firmer, Assorted Sizes	per dozen, $1.75
" 250,	Socket " " "	" 1.50
" 300,	" Framing, " "	" 1.60

FIRE DEPARTMENT AXE.



8 lbs., including 34 inch oak handle. Handle natural wood finish or painted red..Each, $3 50
Price does not include holders.

MALLEABLE AND BRASS AXE HOLDERS.

Malleable painted black (blade and handle holder), the latter with spring.... ...Per set, $1.00
Brass axe holder for fire apparatus with spring handle socket..... " 2.50

FIRE HOOKS WITH POLES.

6 foot pole	$3 50	10 foot pole	$4 50	14 foot pole	$6.00
8 "	4 00	12 "	5.50	16 "	8.00

SOCKET FIRMER CHISEL HANDLES.

	Hickory.	Apple.
Assorted	$5.25	$6.50
Large	5.75	7.50

VULCANIZED FIBRE HEAD CHISEL HANDLES.

Tanged Firmer.

No. 1. Hickory, assorted sizes. .....per dozen, $1.40

Socket Firmer.

No. 2. Hickory, assorted sizes.....per dozen, $1.20

Socket Framing.

No. 3. Hickory, assorted sizes.....per dozen, $1.40
Applewood, ten per cent. extra.

These handles being tipped with a layer of Vulcanized Fibre, will outwear ten ordinary ones. Wood thoroughly kiln-dried.

HOSE BANDS.

Tuerk's Hose Band Clamps.

Illustrates the Clamp screwed partly together, showing the tongues at C slid by each other. The tongues and clamps are cast all in one piece one tongue projecting from each lug of clamp.

Shows the Clamp with the bolt removed and the tongues at C ... suitable to press hose tight down between ends of clamp.

Price List Tuerk's Hose Clamps.

Sizes, inches,	½	¾	1	1¼	1½	2	2¼	2½	3
Hydrant Hose, per doz.	$1 50	1 50	2 00	2 50	3 00	4 00	5 50	7 00	10 00
Steam Hose, "	1 50	2 00	2 50	3 00	3 50	5 50	7 00	8 50	13 00

When additional sizes are ordered, not enumerated above, the price will be the same as nearest size larger and for Spiral Wire Wound Suction Hose give outside diameter and we will send nearest of the above sizes.

Made to suit different ply hose. *In ordering, state for how many Ply Hose desired.*

Caldwell's Patent Hose Strap.

No.						
No.	2,	½ in	3⅜ in	long	Per doz.,	$0 40
"	4,	⅝ "	3¾ "	"	"	40
"	6,	¾ "	4⅛ "	"	"	60
"	8,	¾ "	4¾ "	"	"	60
"	10,	1 "	5 "	"	"	80
"	12,	1 "	5⅜ "	"	"	80
"	14,	1¼ "	6 "	"	"	1 00
"	16,	1¼ "	6⅜ "	"	"	1 00
"	18,	1½ "	6¾ "	"	"	1 20
"	20,	1½ "	7⅛ "	"	"	1 20
"	22,	1¾ "	7½ "	"	"	1 40
"	24,	1¾ "	8 "	"	"	1 40
"	26	2 "	8½ "	"	"	1 80
"	28,	2 "	9 "	"	"	1 60
"	30	2¼ "	9½ "	"	"	1 80
"	32,	2¼ "	10 "	"	"	1 80
"	34,	2½ "	10½ "	"	"	2 00
"	36,	2½ "	11 "	"	"	2 00

Hose Strap Fasteners.

No. 1,	⅜ to 1 inch, inclusive	Each, $0 50
" 8,	1¼ inch to 2½, inclusive	" 75

HOSE PIPES.

Plain, with Solid Tip.

Size				1¼	1½	2	2½	2½
Length, inch.	8			10½	10½	11	12	20
Per dozen	$7				18 00	30 00	48 00	78 00

Plain, with Screw Tip.

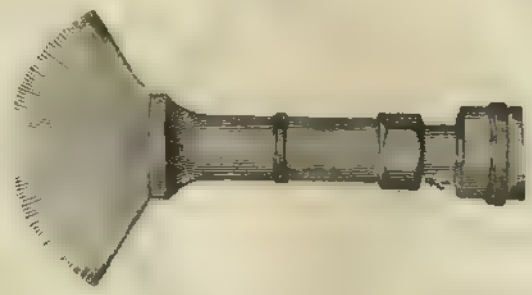
Size	¾	1	1¼	1½	2	2½	2½
Length, ins.	8	12	13	13	14	15	2
Per dozen	$8 00	10 00	12 00	25 00	39 00	75 00	90 00

Cock on Large End.

Size	¾	¾	1	1	1¼	1¼
Length, ins.	6	8	8	12	12	15
Per dozen	$11 00	13 00	15 00	20 00	40 00	45 00

Size	1½	1½	2	2	2½	2½	2½
Length, ins.	12	15	12	20	15	24	36
Per dozen	$53 00	60 00	80 00	110 00	150 00	200 00	240 00

Lowell.

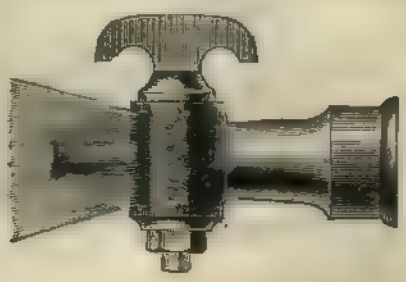


Brass finished, ¾ inch.....Per doz., $9 00
Nickel plated, ¾ " ..... " 9 00

Gem.

Brass finished, ¾ inch .....Per doz., $9 00

Boss.



Nickel plated, ¾ inch.....Per doz., $12 00

Brass Play Pipes.

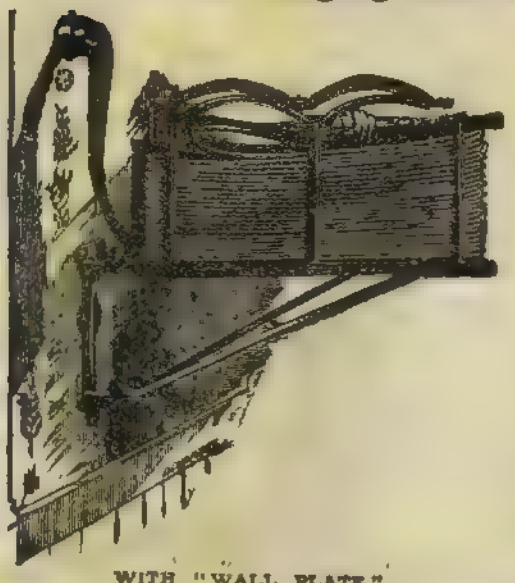
2	x 20 inch	Fixed Nozzle		Each, $ 5 00
2	x 24 "	" "		" 6 00
2	x 20 "	Screw "		" 6 00
2	x 24 "	" "		" 7 00
2½	x 20 "	Fixed "		" 7 00
2½	x 30 "	" "		" 9 00
2½	x 30 "	" "		" 11 00
2½	x 20 "	Screw "		" 8 00
2½	x 30 "	" "		" 10 00
2½	x 30 "	" "		" 12 00

Add for Meta. Handles $2 50 extra.

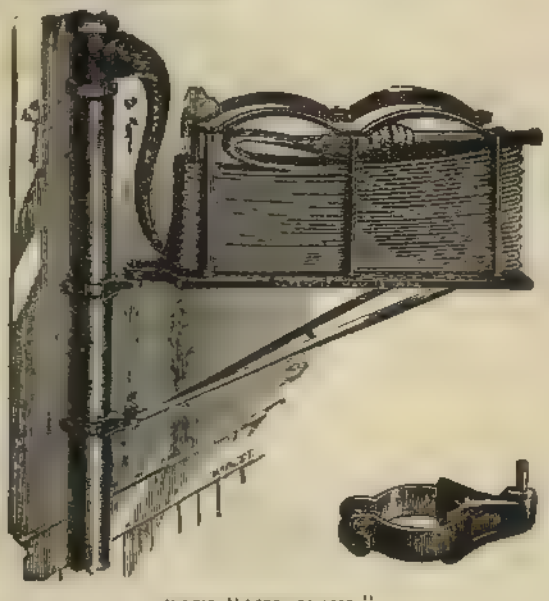
Add for Winding and Painting $2 50 extra.

HOSE RACKS AND REELS.

The Swinging Hose Racks.



WITH "WALL PLATE."



WITH "PIPE CLAMP."

ALL RACKS JAPANNED "RED" UNLESS OTHERWISE ORDERED.

Style of Finish.		Nos. 0 & 00.	Nos. 1 & 2.	Nos. 3 & 4.	No. 5.	No. 6.
Japanned "Red," with	Wall Plate ..... Each,	$5 00	$6 00	$7 00	$7 50	$8 00
" " "	Pipe Clamp ..... "	5 40	6 40	7 40	7 90	8 40
Bronzed in Gold, "	Wall Plate ..... "	5 00	6 00	7 00	7 50	8 00
" " "	Pipe Clamp ..... "	5 40	6 40	7 40	7 90	8 40

NOTICE.—When you order "Racks" with "Pipe Clamps" be sure and give size of pipe they are to fit. If not standard size pipe, you must give the outside diameter.

CAPACITY OF RACKS AND SIZE NUMBER.

FOR "UNLINED LINEN" HOSE.

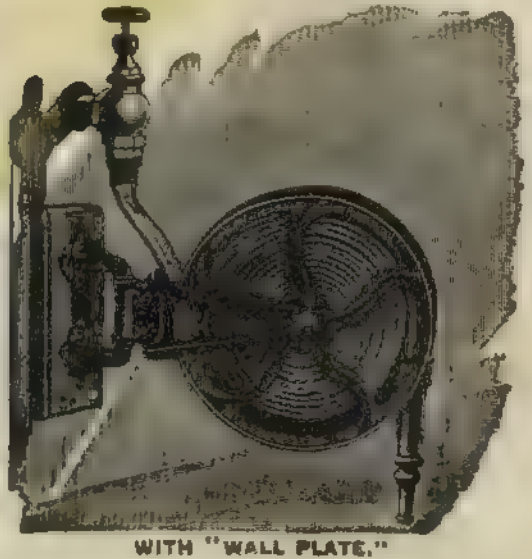
*No. 00,	for 2 inch Hose	Full capacity,	50	feet
* " 0,	" 2¼ " "	"	50	"
" 1,	" 2 " "	"	100	"
" 2,	" 2¼ " "	"	100	"
* " 3,	" 2 " "	"	150	"
" 4,	" 2¼ " "	"	150	"

FOR "RUBBER LINED LINEN" OR "MILL" HOSE.

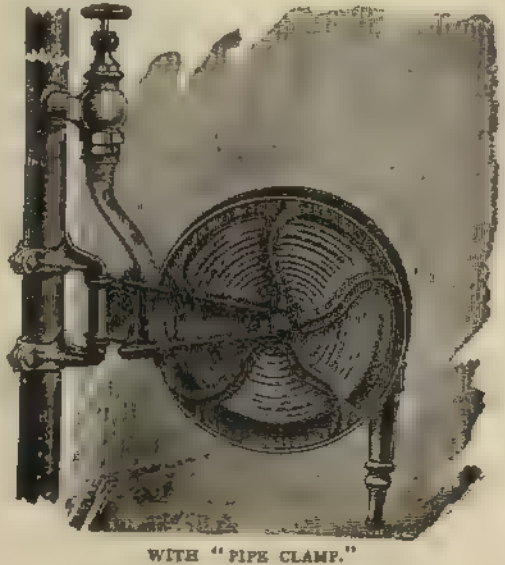
*No. 3,	for 2 inch Hose	Full capacity,	50	feet
* " 4,	" 2¼ " "	"	50	"
" 5,	" 2 " "	"	100	"
" 6,	" 2¼ " "	"	100	"

*For 1¼ and 1½ inch Hose, when specified, we will furnish a Narrow Bed Plate. Nos. 5 and 6 will carry Heavy Hose of almost any make in 50 foot lengths.

The Swinging Hose Reels.



WITH "WALL PLATE."



WITH "PIPE CLAMP."

JAPANNED "RED" WITH "WALL PLATES."

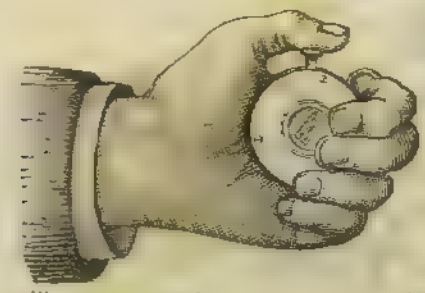
A 1,	for 50 ft.	Unlined Linen,	1½ in.	Each,	$6 00
A 2,	" 50 ft.	"	2 "	"	6 00
A 3,	" 50 ft.	"	2¼ "	"	6 00
B 1,	" 100 ft.	"	1½ "	"	7 00
B 2,	" 100 ft.	"	2 "	"	7 00
B 3,	" 100 ft.	"	2¼ "	"	7 00
C 1,	" 50 ft.	Lined,	1½ "	"	8 00
C 2,	" 50 ft.	"	2 "	"	8 00
C 3,	" 50 ft.	"	2¼ "	"	8 00

WITH "PIPE CLAMP."

Pipe Clamps will be furnished with Reels if desired for attaching Reels directly to water-pipes, at an additional cost per Reel of 40 cents.

NOTE.—Always give with your order, Kind, Size and Length of Hose, that there may be no mistake in the size of Reel.

BENTON TALLYING MACHINE.



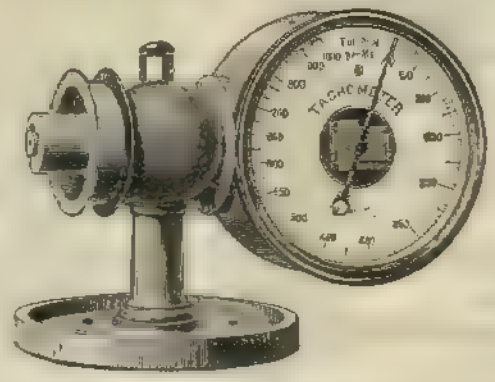
This machine is intended for keeping tally in receiving or counting goods and will be found very convenient for such purposes as it does away with the necessity of paper and pencil, or the liability to forget the count when the attention is called to other matters. The instrument is in a small circular case about the size of a watch, and the count may be recorded by the pressure of the thumb on the lever protruding beyond the case. When not in use, it may be suspended by a cord around the neck, or carried in the pocket as may be preferred.

In using the Register, the better way is to place the middle finger of the left hand through the ring, holding the Register in position so as to bring the pusher directly under the thumb. In order to insure registration, the pusher must be pushed down as far as it will go, then allowed to spring back to its place. In commencing to count, only the 0's show in front, thus 0 0 0. The register will count to 999, the next count causes the figure 1 to appear, making 1 0 0. To take off the registration press the pusher down until the 0 appears at the right, and then change the other figures at the left by turning the thumb buttons on back of Register till the 0's appear, always turning the thumb button on the middle one first.

With 3 figures (as in cut)... Each, $2 50
" 4 " ... " 3·75

TACHOMETER.

Especially Adapted for High Speed Engines.



This apparatus is designed for the purpose of ascertaining, at a glance, the number of revolutions made by rotating shafts. Its construction is based upon centrifugal power, and it consists of a case in which are mounted a pendulum ring in connection with a fixed shaft, a sliding rod and indicating movement. The fixed shaft has a pulley by which the motion is imparted to the pendulum ring and subsequently by the sliding rod to the indicating movement. The pointer on the dial shows the exact number of revolutions made by the pulley per minute. The diameter of driving wheel is marked on dial. The apparatus is very sensitive and will indicate the slightest deviation in speed; it is important, however, that the driving belt should be smooth, and the joint made without lapping; an endless rubber belt answers the purpose.

All internal parts of the apparatus require no oiling, but the pulley shaft should be oiled in the usual manner; the set screws in the journal being provided with proper openings for that purpose.

The motion can be in either direction, and the apparatus may be placed in a vertical or horizontal position, or at any desirable angle between these positions.

These Tachometers have been applied with great success to electric light engines, flour and cotton mills, and can be used with advantage on all such machinery of which it is essential to know, at all times, the exact speed at which it is moving.

The apparatus is of handsome appearance, and so arranged that it can be easily attached. We make two sizes:

Large size, with dial of 7½ inches diameter... $60.00
Small size, with dial of 5½ inches diameter... 35.00

In ordering state the approximate number of revolutions to be indicated.

PORTABLE TACHOMETER.

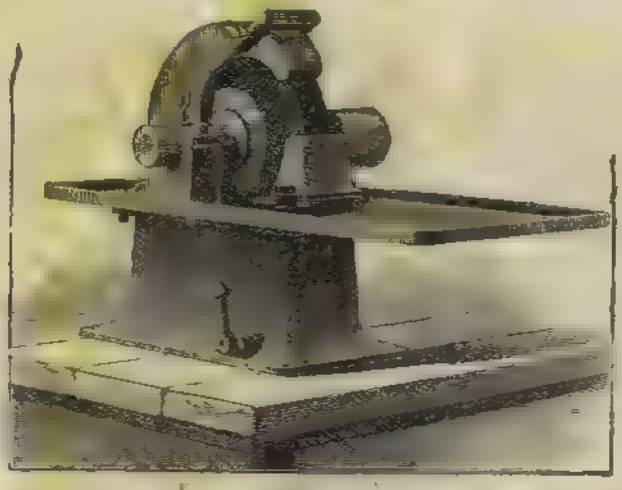
Adapted for High Speed Engines, Electric Dynamos, Etc.

The Portable Tachometer illustrated herewith is similar in construction to that of our Tachometer for permanent attachment. By applying this instrument by hand to the center of rotating shafts it will instantly and correctly indicate the number of revolutions of the shaft per minute. This instrument is arranged with a dial for 1000 revolutions, but with it are also furnished two sets of geared wheels, in proportion of 1 to 2, by which the speed can either be reduced to 500 or increased to 2000 revolutions. These wheels are easily attached to an arbor with locknut provided for that purpose. Instruments for speeds higher than 2000 revolutions or lower than 500 revolutions are made to order.

On unscrewing the end of handle will be found a set screw, by means of which any lost motion may be taken up when it becomes necessary. The dimensions of the Portable Tachometer are: Diameter of dial, 2½ inches, depth of case, 3 inches, entire length, including handle and detachable point, 11 inches; total weight, including morocco case, 5 lbs.

The instrument is of excellent workmanship, plated and finished. It is contained in an elegant morocco case, for easy transportation. We confidently recommend it for its adaptability in obtaining accurate indications of the variations in speed of fast-running machinery.

Each... $55.00



WATER TOOL GRINDERS.

At the price we offer this machine you cannot afford to use grindstones even if they are given to you. Runs an Emery wheel 12 inches in diameter and 2 inches thick, in water to avoid heating the tool when grinding. Can be used either wet or dry. Has no pump to get out of order. An abundance of water is carried up by the wheel itself when the lever is raised to the position shown in cut.

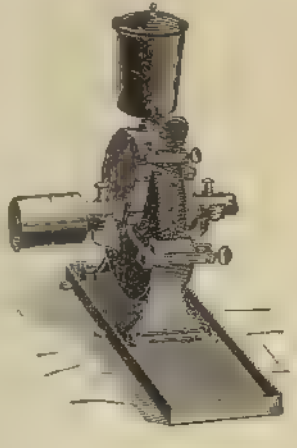
The machine is simple in construction and cannot get out of order; does its work perfectly; is easily cleaned; requires less attention [illegible] It does all the work of [illegible] Try one and you will [illegible] Weight with wheel [illegible] size of wheel, 12 [illegible]

Complete with wheel $40 00
Countershaft 10.00

Can furnish Floor Machine, with same size wheel as Bench Grinder. Weight with wheel and column complete, 300 lbs.

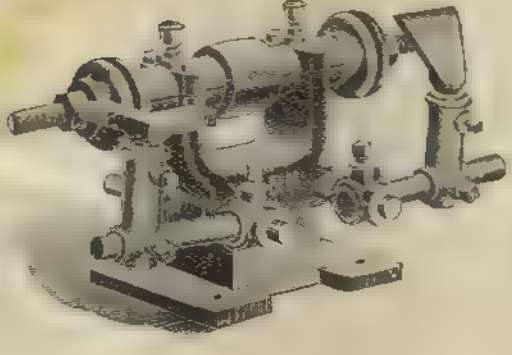
Complete, with wheel $00.00

BENCH WATER TOOL GRINDER.



This Bench Tool Grinder is designed to sharpen machinists' tools of all kinds, running a Corundum Wheel in water, the grade of wheel varying to suit the work to be done. Speed of wheel, 700 to 900 revolutions per minute. Size of pulleys, 3½ x 2½. Weight, 60 lbs.

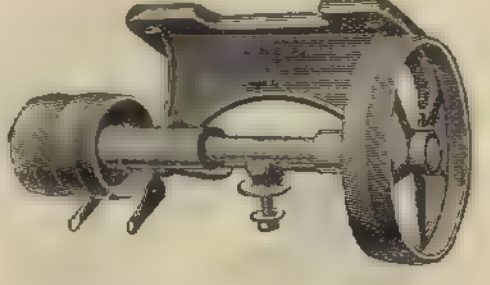
10 x 1 inch wheel, single or double pulleys $25.00
10 x 2 inch wheel, single or double pulleys 30.00
Countershaft, extra 12.00



EMERY GRINDERS, No. A.

Shaft, 15/16; Arbor, ¾; will carry two 10 x 2 Emery Wheels.

Each..... ....8.50

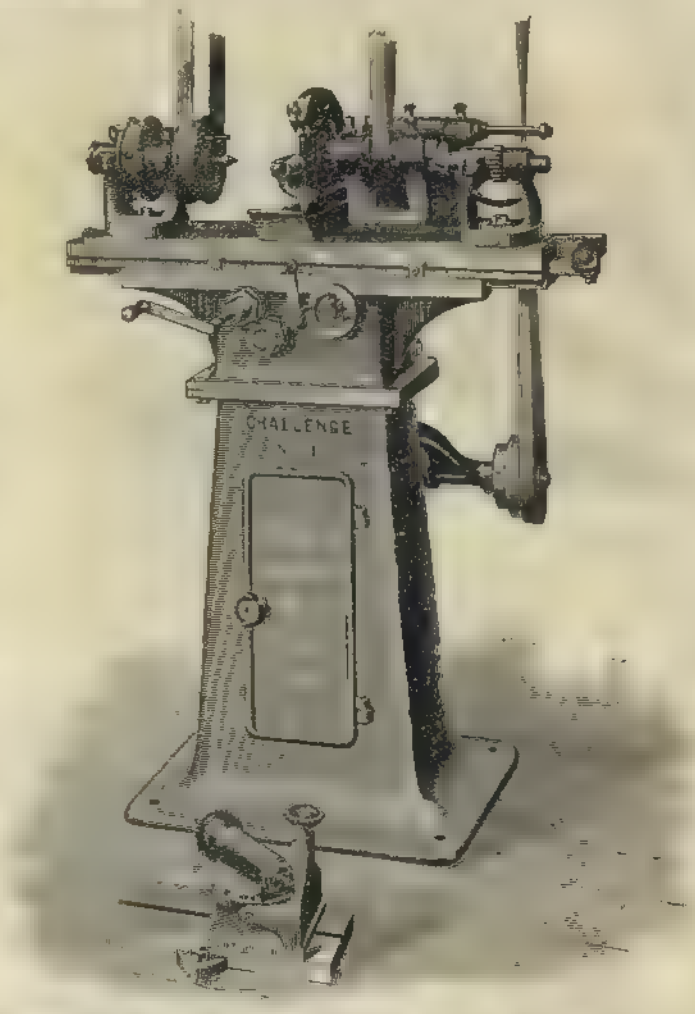


COUNTERSHAFTS, No. A.

Shaft, 1 inch diameter; Tight and Loose Pulleys, 4 inches diameter; Driving Pulley, 8 inches diameter, all for 2 inch belt.

Each $5.00

CHALLENGE UNIVERSAL GRINDING MACHINES, No. 1.



From the [illegible] in every [illegible] has been taken to [illegible] except, of course, in [illegible] and these have been so carefully [illegible] that accuracy [illegible] can be depended upon. The V's are [illegible] with a [illegible] bearing and ground [illegible] The platen swivels by means of the screw at the right hand end and has a [illegible] at the other end permitting a taper of [illegible] inches to the foot. The head [illegible] fits into the groove in the platen for adjustment of the centers. Cylindrical grinding may be done on two dead centers or [illegible] The head carrying the emery wheel [illegible] on a bracket cast solid to the [illegible] bracket is reamed for a [illegible] spindle which the head is bolted projection being provided for truing the wheel as may be necessary for facing. The head is arched and when in its normal position projects over the platen for internal grinding. The emery wheel is brought into position by means of the hand wheel in front operating the head-slide [illegible] bracket, where it can be securely bolted at any point. The pulley for driving the face [illegible] has three steps for changing to [illegible] and the cone overhead that drives the [illegible] spindle, or the work to be ground, is also driven by a three-step pulley faster or slower to suit the diameter of the work. The emery wheel spindle is 1⅜ inch [illegible] running in phosphor bronze bearings [illegible] taper for adjusting for feed [illegible]

Distance between centers, 20 x 10 inches swing; will grind face mills up to 8 inches diameter in cutter-holder. Tight and loose pulley on countershaft, 6 x 3 inches face. Driving pulley for emery wheel, 14 x 3 inches face. Countershaft should run 500 revolutions per minute. Weight, about 800 pounds.

Adapted to shaft or cylindrical grinding, straight or taper, face grinding, reamer grinding, straight or taper, internal grinding, and other work of like character, including all necessary adjuncts and water appliance—Hand Feed $300.00

Automatic and Hand Feed 400.00

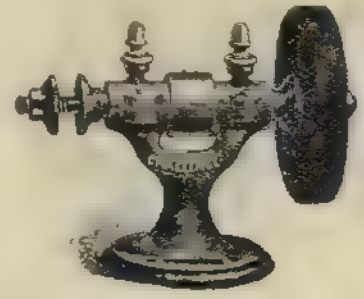
Cutter Holder, for grinding milling cutters of all shapes, thus giving the machine a scope with out an equal at double the price extra 50.00

CHALLENGE CUTTER HOLDERS.

For Universal Grinding Machines and for Cutter Grinders.

Special notice is directed to this device, as with its use on the Universal Grinding Machine, or Cutter Grinder, every form of [illegible] can be accurately [illegible] The cut represents [illegible] to the [illegible] holding a [illegible] mill. The lower part of the screw [illegible] is made [illegible] with collars and centers at each end, and swings upon the [illegible] supporting [illegible] means [illegible] for setting [illegible] by [illegible] on the screw. The supporting set screws at the [illegible] swivel and [illegible] are provided with [illegible] the screw [illegible] extending through a [illegible] shaft below. These features are especially [illegible] and will be appreciated by all [illegible] The swiveling of the top [illegible] at the [illegible] as the screw [illegible] flange for [illegible] cutters, with the upward and downward adjustment for hollow and face mills will be found all that is desired. End and hollow mills are chucked

Each ..... $50.00 | When chuck is wanted add $10.00



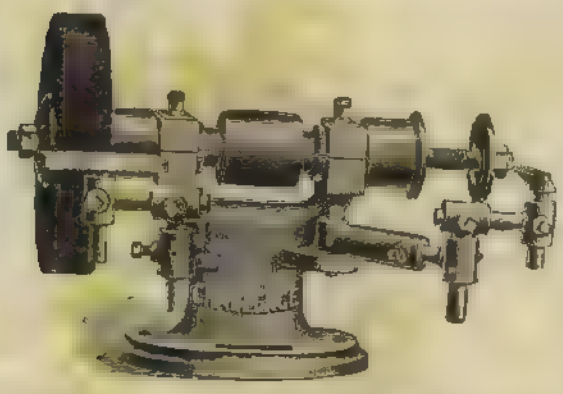
CHALLENGE GRINDERS.

No. 1.

Has Spindle 11 x ⅜ inch; Bearings, 1¼ x ⅜ inch; Pulley, 2 x 1⅜ inch face; Distance between Wheels, 7 inches; Diameter of Flanges, 1⅞ inch; Greatest distance between flanges for thickness of wheels, 1¼ inch; Diameter of Spindle between flanges, ¼ inch. Height to center of Spindle, 5 inches; Speed of Countershaft, 400 revolutions.

No. 1. Carries 2 Wheels 6 x 1 inch $5.00

No. 1, Countershaft 5 00



CHALLENGE GRINDERS.

Nos. 2, 3 and 4.

Spindle, No. 2, 13¾ inches long x 1 inch diameter; No. 3, 20½ x 1⅛ inch; No. 4, 24 x 1⅜ inch. Bearings, No. 2, 4 x 1 inch, No. 3, 4 x 1⅛ inch; No. 4, 4¾ x 1⅜ inch. Pulley on Spindle, No. 2, 2¼ x 2 inch face; No. 3, 3¼ x 3 inch; No. 4, 3¾ x 3½ inch. Distance between Emery Wheels, No. 2 8 inches, No. 3, 13 inches, No. 4, 14 inches. Diameter of Flanges, No. 2, 2⅜ inches; No. 3, 3⅛ inches; No. 4 4⅛ inches. Greatest distance between flanges for thickness of wheels, No. 2, 1¾ inch, No. 3, 2⅜ inches, No. 4 3 inches. Height to center of Spindle, No. 2 5¾ inches, No. 3, 7 inches, No. 4, 9½ inches. Diameter of Spindle between flanges, No. 2, ⅝ inch; No. 3, 1 inch, No. 4 1 inch. Speed of countershaft, No. 2, 400 revolutions; No. 3, 450 revolutions; No. 4, 475 revolutions.

No. 2, Carries 2 Wheels 10 x 1 inch ..$10.00
" 3, " " 2 " " 12 x 1½ " ... 15.00
" 4, " " 2 " " 14 x 2 " ... 20.00
" 2, when ordered without Rests..... 8.00
" 3, " " " " 12.50
No. 4, when ordered without Rests.....$17.00
No. 2, Countershafts..... 7.50
" 3, " 10.00
" 4, " 10.00

Adapted to Plain Columns, and to Columns having Countershafts. Adapted to Plain Tables, and to Tables having Countershafts.

Twist Drill Rest, No. 2, 75c.; No. 3, $1.00; No. 4, $1.00 extra.

CHALLENGE WATER GRINDERS.

Nos. 1 and 1½.—Bench Machines.

Dimensions same as Challenge Grinder, No. 1. Adapted to Plain Column and to Column having Countershafts.

No. 1, carries 1 Emery Wheel, 6x1 in $10.00
" 1½ " 2 " " 6x1 in. (spindle extended to the right for a wheel to run dry)..... 11.50
Countershaft..... 5.00

Chalenge Water Grinder.

CHALLENGE GRINDERS.

No. 5.

Adapted to Plain Column and to Column having Countershaft, but this No. has Cone Pulley. The cut shows single pulley. Also adapted to Plain Tables and to Tables having Countershaft.

Spindle, 32½ in. long x 1⅜ in. diam. Bearings, 5x1⅜ in.; pulley on spindle, 4 and 5½x4¼ in. face; distance between emery wheels, 20½ in.; diam. of flanges 5½ in.; greatest distance between flanges for thickness of emery wheels, 4 in.; height to center of spindle 11½ in.; diam. of spindle between flanges, 1⅛ in.; speed of countershaft, 425 revolutions.

All Challenge Grinders are provided with our Telescopic-swivel Rests.

No. 5, carries 2 wheels, 18x2 in.....$35.00
When ordered without rests..... 31.50
Countershaft, No. 5.....$15.00
Twist Drill Rest.....extra, 1.25

CHALLENGE SAW GUMMERS.

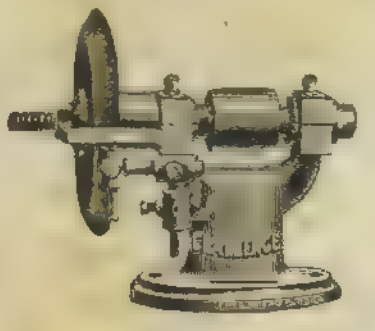
No. 1.—Bench Machine.

Dimensions, etc., same as on the regular Challenge, No. 1, except the spindle, which is shorter for only one wheel. Speed of Countershaft, 400 revolutions. Adapted to Plain Column and to Column having Countershaft.

No. 1 carries 1 wheel, 6x1 in.....$4.00
" Countershaft..... 5.00

Nos. 2, 3 and 4.—Bench Machines.

Dimensions, etc., same as on regular Challenge, No. 2, except the spindle, which is shorter for only one wheel. Adapted to Plain Columns and to Columns having Countershafts. Adapted to Plain Tables and to Tables having Countershafts.



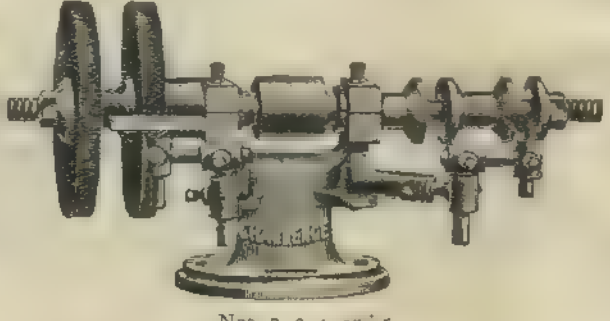
No. 2, carries 1 wheel, 10x1 in..... $8.00
" 3, " " 12x1½ " 12.00
" 4, " " 14x2 " 17.00
Countershaft, No. 2..... 7.50
" " 3..... 10.00
" " 4..... 10.00

CHALLENGE FOUR-WHEEL BUFFER AND GRINDER.

Nos. 1, 2, 3, 4 and 5.—Bench Machines.

Dimensions same as regular Challenge Grinders, except that the spindle is longer. Adapted to Plain Columns and to Columns having Countershaft. Adapted to Plain Tables and to Tables having Countershaft.

No. 1.

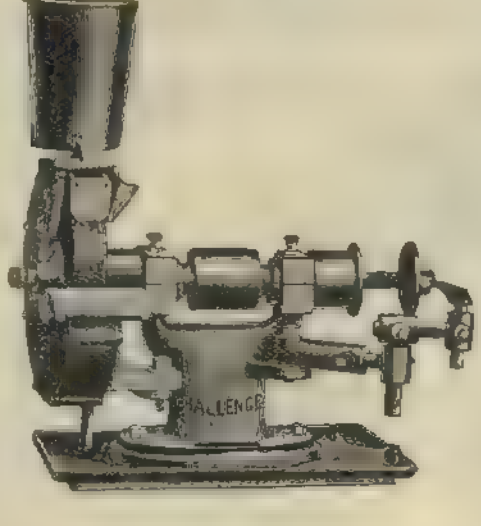


Nos. 2, 3, 4 and 5.

No. 1, carries the equivalent of 2 emery wheels, 6x1 in..... $7.50
" 2, " " " " 10x1 " 12.50
" 3, " " " " 12x1½ " 20.00
" 4, " " " " 14x2 " 25.00
" 5, " " " " 18x2 " 42.00

When ordered without Rests, No. 2, $10.50; No. 3, $17.50; No. 4, $22.00; No. 5, $38.50.

Countershaft, No. 1, $5.00; No. 2, $7.50; Nos. 3 & 4, $10.00; No. 5, $15.00.



CHALLENGE WATER GRINDERS.

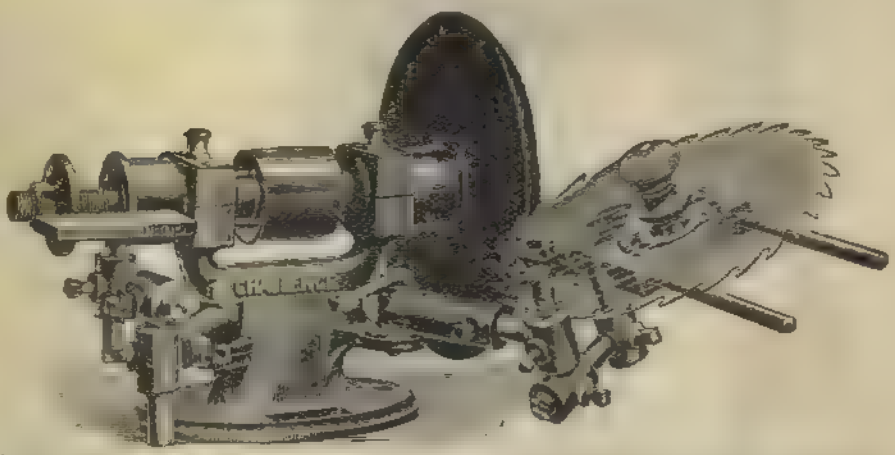
Nos. 3, 4 and 5.—Bench Machines.

Adapted to Plain Tables and to Tables having Countershafts. No. 5 has Cone Pulley. Water-pot under table, not shown in this cut.

No. 3, carries wheel for water, 10x1½ in.; other wheel, 12x1½ in..... $27.00
" 4, carries wheel for water, 12x2 in.; other wheel, 14x2 in..... 35.00
" 5, carries wheel for water, 16x2 in.; other wheel, 18x2 in..... 55.00
Water Attachment only (to be easily put on any Challenge Grinder), No. 3..... 12.00
Ditto, No. 4..... 15.00
Ditto, No. 5..... 20.00
Countershafts, No. 3..... 10.00
" " 4..... 10.00
" " 5..... 15.00

CHALLENGE SAW SHARPENERS. No. 30.

(Bench Machine.)

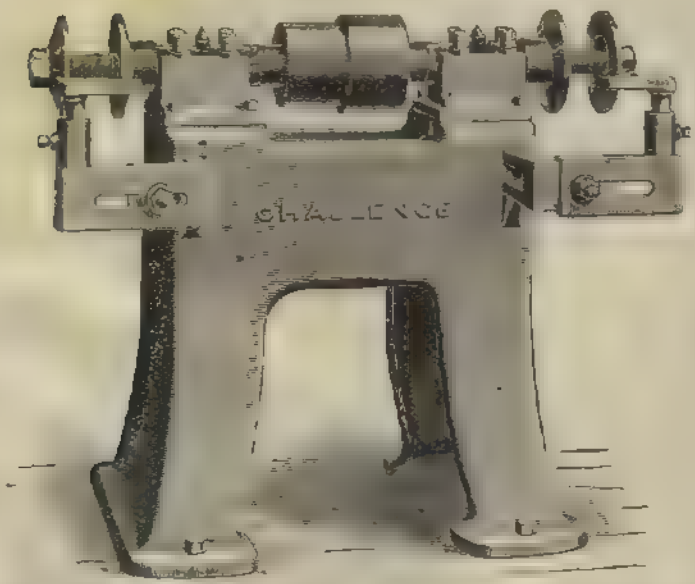


This is a very simple and effective Saw Sharpener and Gummer. It is quickly adjusted to any size circular saw up to 24 inches for rip or cross-cut; square or bevel to any degree, and any shaped tooth, or distance between the teeth; as will be readily seen by reference to the engraving. The telescopic swivel rest supporting the saw, adapts the saw to any position required to sharpen saws varying in diameter, whether rip or cross-cut. Near the wheel is seen a small flat rest, adjustable to the gullet of the saw, near which is a stop, operated by a set screw on one of the guide rods, to govern the depth of cut towards the gullet. The movable plate through which these rods pass has a stud upon which it is centered by the nut on the left hand rod. In operating the knobbing spindle, and the saw carried for wards the wheel by the stop. The saw is then moved to the next tooth, and so on. The rest for the saw near the wheel is graduated. Every tooth is therefore sharpened exactly alike. A flat face wheel for the emery spindle will be found useful in many cases. The price includes the wheel shown, but we recommend a second wheel, and many cannot be without it who still follow the old practice of filing. Dimensions same as Challenge Grinder No. 3. Carries wheels 12 inches in diameter. Adapted to plain column and to columns having countershaft. Adapted to plain tables and to those having countershaft.

No. 30, for saws to 24 inches	$25.00
Saw Attachment only	10.00
No. 03, to run only one wheel as shown in cut	22.00
Countershaft	10.00

CHALLENGE GRINDERS.

Nos. 6 and 7.



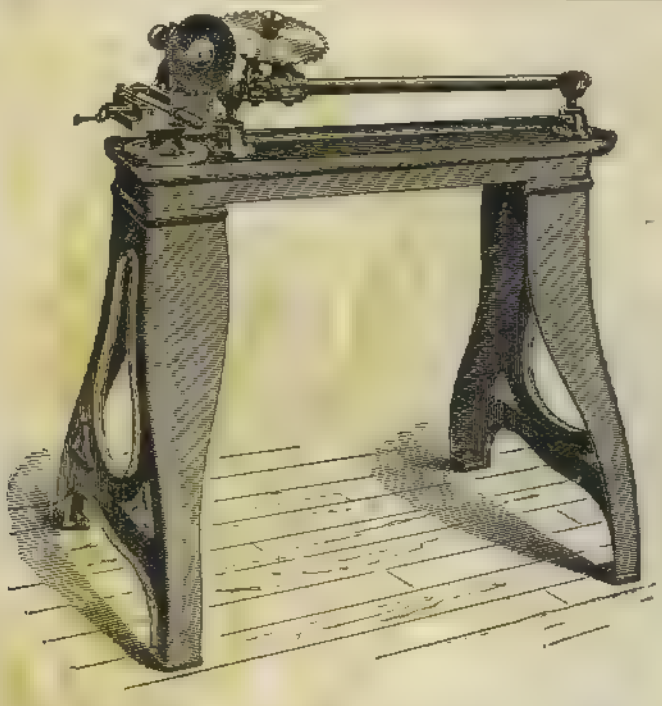
Has self-oiling boxes, lubricating the spindle evenly the length of the bearings, one filling being sufficient for a long time. Bearings are "babbitted" with a superior anti-friction metal and are of ample length. Provided with the Challenge Bearing Protectors, which keep emery dust from the bearings and oil from the emery wheels. Distance between emery wheels unusually long—sufficient for two men. Base curved outwardly for broad foundation. Rests adjustable in any direction.

	No. 6.	No. 7.
Length of Spindle	38 in.	48 in.
Diameter of Spindle	1⅝ "	1⅝ "
Length of Bearings	7½ "	9 "
Distance between wheels	20 "	34 "
Diameter of Bearings	6 "	7 "
Greatest distance between thickness of wheels	4 "	4½ "
Size of hole in emery wheel	1½ "	1½ "
Height to center of spindle	36 "	34 "
Weight (including countershaft) about	500 lbs.	800 lbs.

Size Cone Pulley on Spindle..4 and 5½x4¼..6 and 7x4½ in. face.
Size tight and loose pulleys on countershafts, No. 6, 7x4¼ inch face; No. 7, 8x4½ inch face.

Speed of Countershaft, No. 6, 550 revolutions for wheels 20x2½ inches, belted on fast speed; smaller wheels to be run when belted on slow speed. Countershaft No. 7, 500 revolutions for wheels 24x3 inches belted on slow speed. Smaller wheels to be run when belted on fast speed.

No. 6, carries 2 Emery Wheels, 20 x 2½ inches	$75.00
No. 7, " 2 " " 24 x 3 "	95 00
Countershaft, No. 6	20 00
" No. 7	25 00



CHALLENGE SAW SHARPENERS.

Nos. 1, 2 and 3.

No. 1, complete, for circular saws up to 30 inches, including Countershaft and two Emery Wheels..... .....$100.00

No. 2, complete, for circular saws up to 48 inches, including Countershaft and two Emery Wheels..... 125.00

No. 3, complete, for circular saws up to 72 inches, including Countershaft and two Emery Wheels... ..... 150.00

Straight Saw attachment, either size..... 25.00

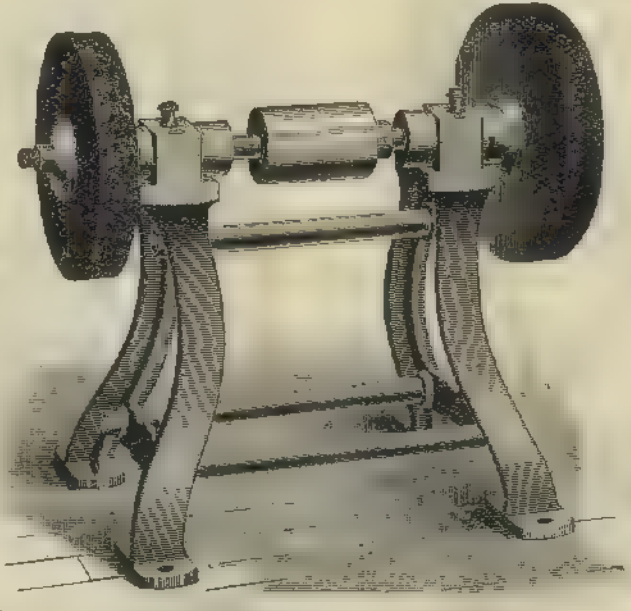
CHALLENGE POLISHING AND GRINDING MACHINES.

No. 1.

Spindle 4¾ x 1½ inch; Bearings, 6⅝ x 1½ inch. Tight and Loose Pulley, 4⅜ x 3¾ inch face; Flanges, 5½ inches. Distance between Wheels, 32 inches. Height to Center of Spindle, 29 inches. Floor Space, 24 x 30 inches; Weight, 200 pounds; Diameter of Spindle between Flanges is made for 1 or 1¼ inch hole in wheels as preferred.

Has self-oiling babbitted boxes, bearing protectors; admits large work under the wheels, and is well and substantially built. These features are especially commended to your notice.

No. 1, Carries Large Wood or Emery Wheels, Spindle, 1½ inch.....$45.00



CHALLENGE SURFACE GRINDERS.

Nos. 3, 4 and 5.—Bench Machines.

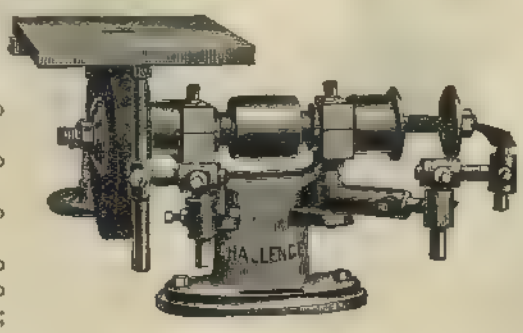
Surface Plate, No. 3, 9x14 in.; No. 4, 12x18 in.; No. 5, 14x24 in. Surface Plate swings out of the way so both wheels may be used for ordinary grinding, and is adjustable to follow the wear of the wheel. Adapted to Plain Columns and to Columns having Countershafts. Adapted to Plain Tables and to Tables having Countershafts.

No. 3, carries 1 Surfacing Wheel, 10x1½ in., and 1 other wheel, 12x1½ in $35.00
" 4, carries 1 Surfacing Wheel, 12x2 in., and 1 other wheel, 14x2 in..... .... 45.00
" 5, carries 1 Surfacing Wheel, 16x2½ in., and 1 other wheel, 18x2 in..... 70.00

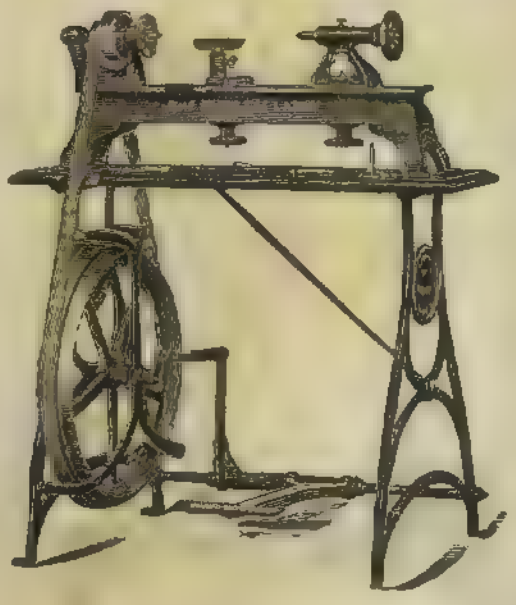
No. 5 has a Cone Pulley with two steps.

Countershafts, Nos. 3 and 4 ..... 10.00
" " 5..... 15.00

Surface Attachment only: No. 3, $20.00; No. 4, $25.00; No. 5, $35.00.



EIGHT INCH AMATEUR LATHES.

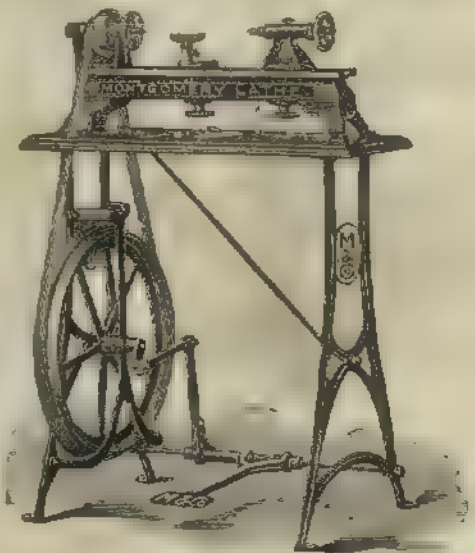


The Peerless Lathe has been designed to meet the demand for a cheap Foot Lathe of larger capacity than the Little Favorite It will turn a piece 18 inches in length by 8 inches in diameter it has a $\frac{5}{16}$ inch hole through the head spindle for convenience in turning the ends of wire rods, etc. Each lathe is furnished, without extra charge, with one face plate (turned and polished), two pointed centers, one wood center, one drill pad, one blank center for fitting a small drill-chuck, and two T rests. The balance wheel is turned and hung in double bearings which support it on each side, and is provided with our improved [illegible] The table has handsomely moulded edges finished in the natural color of the wood, and every part is well finished and fitted.

Foot Lathe, (like cut)	$35.00
Lathe, without stand	18 00
Countershaft	6.00
Stand alone	17.00
Scroll Saw Attachment	5.00
Circular Saw Attachment, with two saws	10.00
Slide Rest	12.00
Diamond Drill Chuck, fitted	2 50
Three inch Champion Chuck, fitted	5.50
Extra set of Jaws for same	1.25
Set of Six Slide Rest Tools	1 75
" Ten " "	2 50
Lathes of extra length, to turn 36 inches	45 00

THE MONTGOMERY LATHE.

Six Inch Swing.

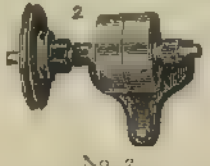


The new Montgomery Lathe has been designed to meet the wants of a large class of customers who want a good lathe at a reasonable price. It is made entirely of steel and cast iron. Will turn a piece thirteen inches in length, by six in diameter. The head spindle runs in adjustable bearings so that it can at all times be kept tight, and in line with the dead center, and has a $\frac{1}{4}$ inch hole through it. The two section cone pulley is made to run a one inch flat belt, giving much more power than the common string belt run in grooved pulleys, usually furnished on small Lathes. The Face plate screws on the end of the spindle and the centers are fitted to carefully reamed taper holes. Each Lathe is furnished without extra charge, with one Face plate, two point centers, one center for turning wood, one step center or drill pad, one blank center for fitting a small chuck and two T rests. The foot power is of the most improved kind, being the same that we use on our large high-priced Lathes. The balance Wheel is turned and polished and the crank is counterbalanced. It has bearings on each side of the wheel and is the only lathe of this size made with that improvement. The table is of hard wood with handsomely moulded edges, finished in the natural color of the wood, being made in the most thorough manner, of first-class materials, and elegant in design and finish, it is equally an ornament to the room of the student or the workshop of the amateur.

Foot Lathe, complete, (see cut)	$25.00
Lathe, without the table	15 00
Table, alone	12 00
Countershaft	6.00
Slide Rest	10.00
Set of ten Slide Rest Tools	2.50
Set of six Slide Rest Tools	$1.50
Almond Drill Chuck, holds from 0 to $\frac{1}{16}$	5 50
Champion Chuck, for small work, to 2 in.	4.50
Champion Chuck, for small work, to 3 in.	5.50
Extra set of Jaws for holding drills	1.25

SMALL LATHE COUNTERSHAFTS.

No 1



No 2

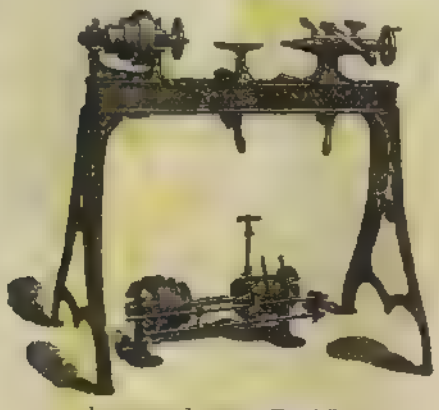
No. 3.

These are very useful for running small lathes, or any other small machinery, by power.

No 1, with fast and loose pulley, 3 inches diameter, 1 [illegible] inch face and flat cone pulley, 5 inches and 3 inches ..... each, $3 00

No. 2, with fast and loose pulley, 3 inch diameter, 1⅛ inches face, and groove cone pulley, 4 inches and 2 inches ..... each, 2.50

No. 3, with two groove cone pulleys, 4 inches and 2 inches, both fast ..... " 2.50



Lever and Screw Feed Lathes.

DIAMOND SPEED LATHES.

Well made and serviceable. In our judgment they are good value for the money.

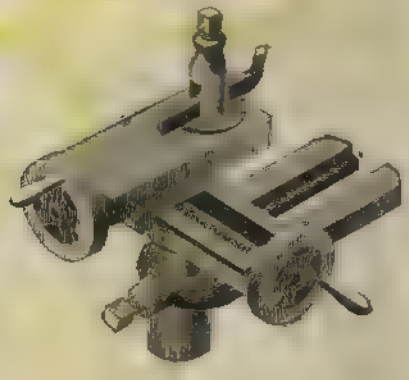
Swing.	Bed.	Without Lever Attachment	With Lever Attachment	With Countershaft	Extra per foot.
10-inch	4 feet.	$60.00	$72.50	$87.50	$5 00
13 "	5 "	75.00	95.00	115.00	7 00
16 "	6 "	100.00	120.00	145 00	10 00

When ordered with short or bench legs prices are $10 00 less

YOUNG'S BENCH LATHES.

Length of bed.....feet,	3½	4	5	6
Swing.....inches,	10	12	12	12
Dist between centers, in.	24	28	40	52
Each.	$65.00	80.00	83.00	86.00

Back Gears for 12 inch Lathe, extra, $15.00. Lever Feed for Tail Spindle, extra, $5.00. Back Geared Lathes have a three section cone.



SLIDE REST.

The cut represents a small Slide Rest suitable for any lathe swinging from 6 to 8 inches, it has a longitudinal motion of 3 inches and a transverse motion of 1⅝ in. It can be used for turning straight or taper work, boring straight or taper holes, etc. Can be raised or lowered to suit different heights of centers and is a very useful attachment to any lathe.

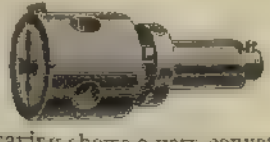
Price $6.00

BOX CUTTER.

For Turret Chucks and Screw Machines.

This is used on screw machines for turning to size in making studs and screws from round rods. The front end is fitted with a bushing, that in all cases is adapted to the size of rod used. The cutter is easily set to cut to any stock down to any desired size at one cut and when so set makes any number of pieces exact to any determined size and length. Each box tool is furnished with one bushing and one cutter

Price, as shown in cut.....each, $4.00



DIE HOLDER FOR TURRET.

This engraving shows a very convenient die holder for Screw Machine or Turret Chuck. It is so constructed that when properly set in relation to the cutter, a given point on the dies with the work in that point is reached, making it impossible to cut the work or dies. Size for 3-16 in. diameter, to cut ¼ in. and under, or machine screw numbers from 14 down.

Price.....$4 00

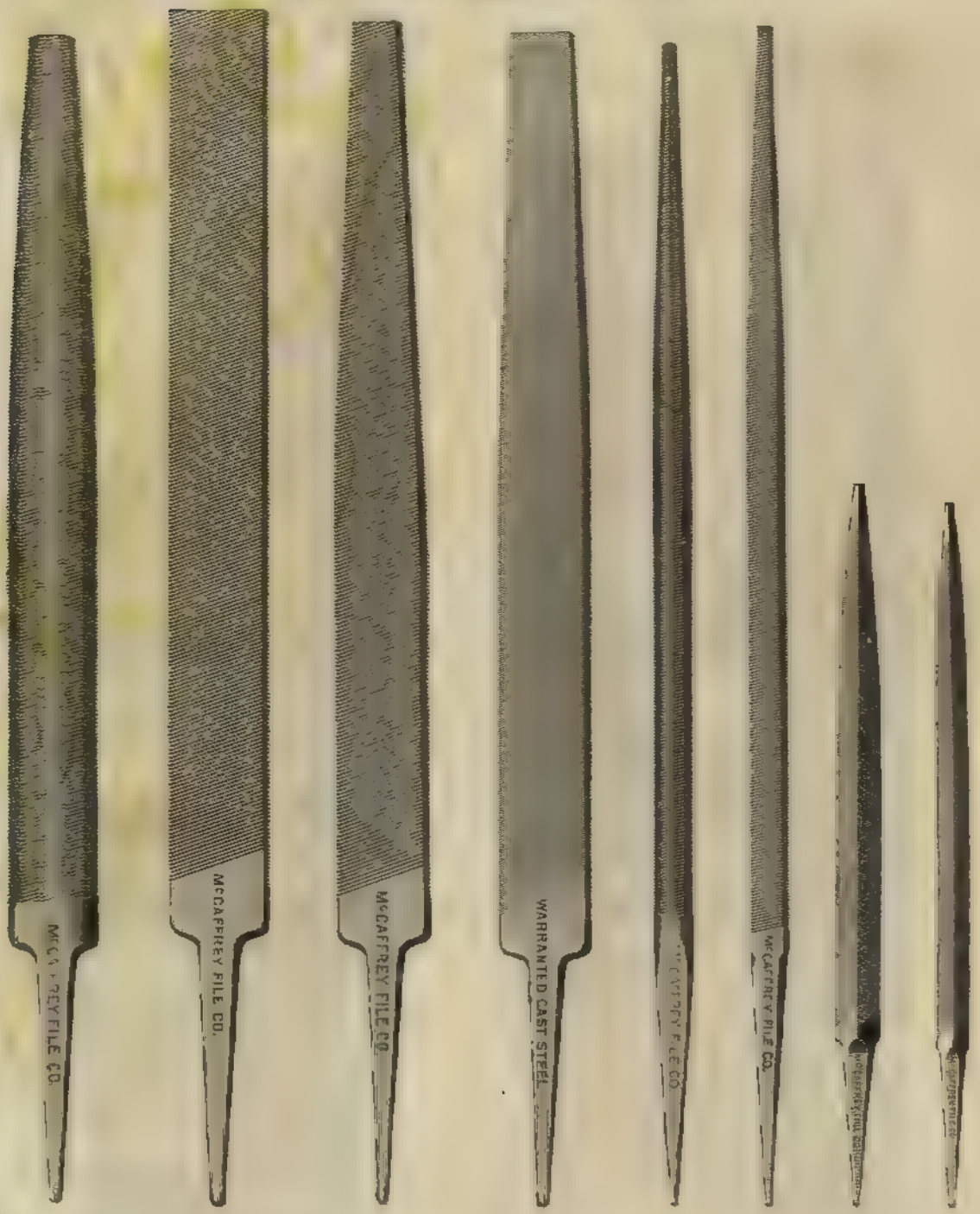
Smaller sizes for ⅝ in diameter dies..... 3 50

TAP HOLDER.

The Tap Holder is made on the same principle as the Die Holder, to release automatically, when holes are tapped the desired depth. Holds taps with ¼ inch shanks.

Price $3.50

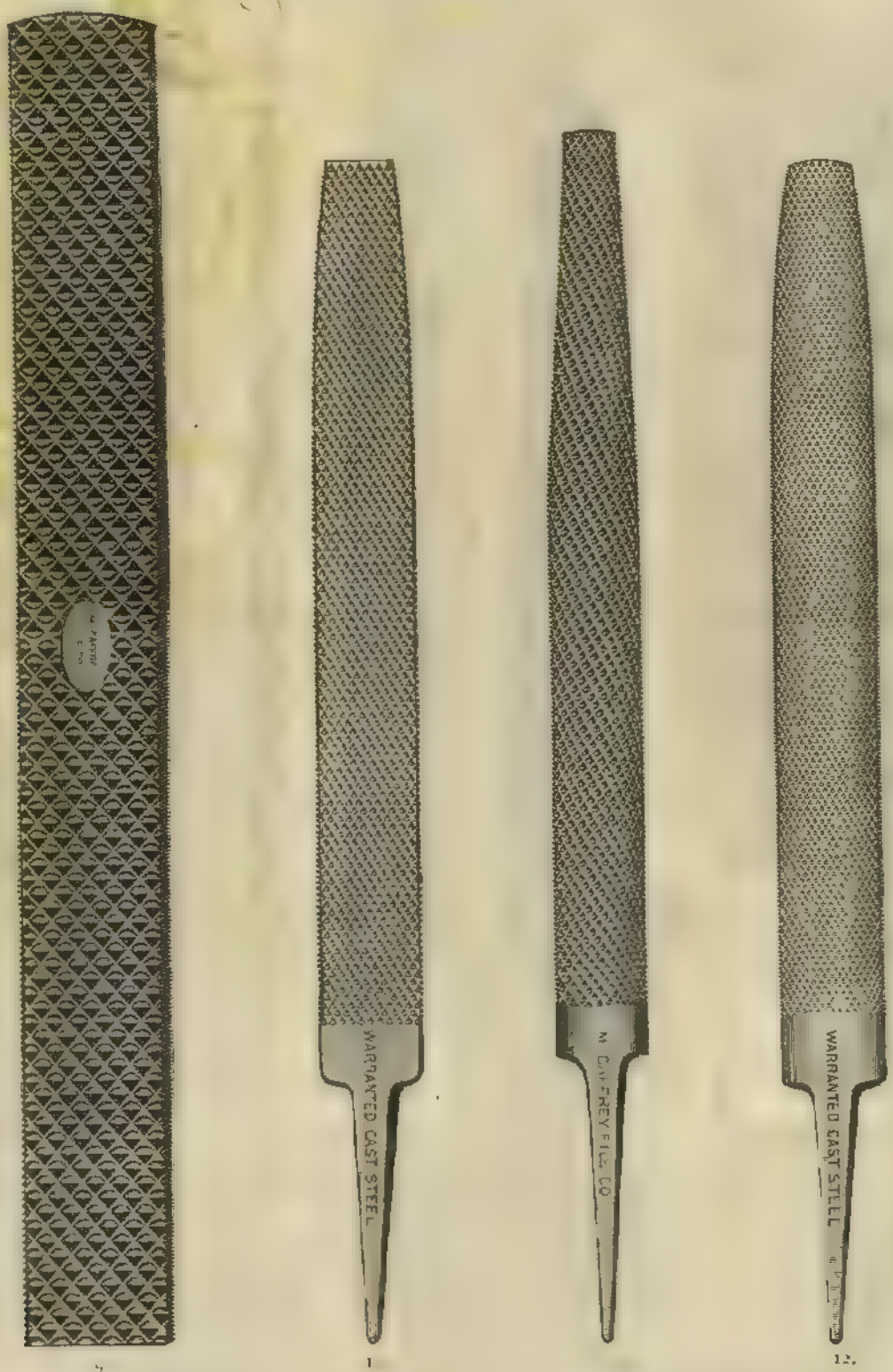
McCAFFREY AMERICAN FILES.



We claim that for ordinary shop use there is no file superior to the McCaffrey. It does not make any difference to the Messrs. McCaffrey how low or how high some other manufacturer is offering his so-called AT American files, they keep right on making the same quality and standard excellence; hence are what is generally known as a high-priced file. They are high-priced, and we are confident that there are a great many small consumers who buy American machine-cut files cheaper than we do, but what do they get? And is it really economy? Now, when we say these are high priced files, you may think we refer to 50 or 100 per cent. more than others. Well, we don't—say 15 per cent more at the most. What does 15 per cent. more on the original cost amount to when you get at least 50 per cent. more in quality?

These McCaffrey files are the cheapest file made in America to-day, when you consider the quality. The next time you are in want of some Americans, give these a trial, and if not exactly as we represent send them back.

McCAFFREY AMERICAN RASPS.



No. 1 Half-Round File.
" 2. Hand File.
" 3. Flat File.
" 4. Mill or Flat File.
" 5. Round File.
" 6. Square File.

No. 7. Regular Taper Saw File.
" 8. Slim Taper Saw File.
" 9. Horse Rasp.
" 10. Flat Wood Rasp.
" 11. Half-Round Wood Rasp.
" 12. Half-Round Cabinet Rasp.

PRICE LIST OF McCAFFREY FILES.

MILL AND ROUND				FLAT AND SQUARE				HAND, WARDING & PILLAR				HALF RD AND THREE SQ			
Inch	Bastard	1 Cut	Smooth	Inch	Bastard	2d Cut	Smooth	Inch	Bastard	2d Cut	Smooth	Inch	Bastard	2d Cut	Smooth
4	$1 85	$2 15	$2 40	4	$2 00	$2 40	$2 65	4	$2 25	$2 70	$3 00	4	$2 5	$3 00	$3.30
[illegible]	2	2 4	[illegible]	5	2 20	2.60	2.90	5	2.50	3.00	3.30	5	2 80	3.35	3.70
6	2 25	2.65	2 95	6	2 50	2.95	3.25	6	2.80	3.30	3.65	6	3 20	3.80	4.15
7	[illegible]	3 [illegible]	3 30	[illegible]	2 80	3.30	3 75	7	3.20	3 75	[illegible]	7	[illegible]	4 35	4 80
8	2 [illegible]	3 45	3 70	8	3.40	4.00	4.35	8	3.70	4.35	4.75	8	4.30	5.00	5.50
9	3 3	3 85	4.20	[illegible]	4.00	4.70	5.10	9	4.35	5.10	5.55	9	5.00	5.85	6.40
10	3 [illegible]	4.4[illegible]	4 80	10	4.70	5.45	5.90	10	5.20	6.00	6.55	10	5.80	6.75	7.30
11	4.[illegible]	5 20	[illegible]	1[illegible]	[illegible]	6 30	[illegible]	11	[illegible]	7 30	7. [illegible]	11	[illegible]	7 [illegible]	[illegible] 45
[illegible]	5 [illegible]	6 20	6.75	12	6 70	7.70	8.40	12	7.50	8.60	9.40	12	7.80	9.00	9 75
13	[illegible]	7.45	8 05	13	8 00	9.15	10 00	13	8.90	10.20	11.00	13	9.10	10.40	11.25
[illegible]	7 [illegible]	8.90	9 65	14	9 50	10.90	11.80	14	10.50	12.00	13.00	14	10 60	12.10	13.10
15	9.3[illegible]	1[illegible]	1.45	15	11 20	12 75	13 75	15	12 [illegible]	14 [illegible]	15 [illegible]	15	12 40	14 15	15 25
[illegible]	11 00	12 80	13.[illegible]	16	13.10	14.85	16.00	16	14.30	16.20	17.50	16	14.50	16.50	17 70
17	12.[illegible]	14.[illegible]	15.60	17	15.25	17.25	18.45	17	16.00	18.75	20.10	17	16.90	19.10	20 50
18	13.1	15 00	15 [illegible]	18	17.65	19 75	21.20	18	19.20	21.50	23.00	18	19.60	22.00	23 50
19	17 [illegible]	1[illegible] 70	21.10	19	20.30	22 75	24.35	19	22.10	24 75	26 50	19	22.60	25.30	27 10
2[illegible]	[illegible]	[illegible] 22 [illegible]	24.[illegible]	20	23 20	26.00	27.85	20	25.30	28.35	30.35	20	26.00	29.10	31 20

EXTRAS.
Mill Dead Smooth advance 10 per cent.
Mill Nest Blanks " 10 "
Cross Cut Saw Blunt " 5 "

EXTRAS.
Cant Blunt (Double Cut) advance 2 in.

EXTRAS.
Ginsaw (Single Cut) take Bastard Price.
Slotting (Blunt) advance 2 in.

EXTRAS.

Knife	advance 1 in
High B'ck Hlf Rd (Blunt)	" 2 "
Cross	" 2 "
Feather Edge	" 2 "

TAPERS			SLIM TAPERS.		Pitsaw Blunt.	Hook Tooth B'lunt
Inch	Single	Double	Single	Double	Single.	Single.
3	$1 10	$1 60	$1.20	$1 80	$2 10	.
3½	1 20	1 00	1 2	1 90	2 10	..
4	1.30	1 75	1.5[illegible]	1 90	2.20	.
4½	1.4[illegible]	2 00	1.45	2 10	2 30	..
5	1 70	2 40	1.7	2 10	2 50	.
5½	2 00	2 [illegible]	1.9[illegible]	2 [illegible]	2 [illegible]	.
6	2 4[illegible]	3 25	2 10	2 85	3 30	$3 [illegible]
7	3 [illegible]	4 00	2 5[illegible]	3 30	3 70	3 [illegible]
8	3 80	4 [illegible]	3 08	3 30	4 30	4 [illegible]
9	4 [illegible]	5 40	3 70	4 [illegible]	5 00	5 10
10	5 [illegible]	7 [illegible]	4 50	5.6[illegible]	5 [illegible]	6 [illegible]
11	7 [illegible]	8 80	5 [illegible]	6 75	6 70	7 10
12	9 00	10 80	6 50	8.2[illegible]	[illegible] 70	8 40
13	11 00	12 [illegible]	[illegible] 30	9 75		...
14	13 [illegible]	15 [illegible]	1[illegible]	11.50	.	.

EXTRAS.
Bar saw, Heavy, Blunt, take Taper Double Cut Price.
Hand [illegible] Taper "
Taper Points, same price.
Crosscut Saw Blunt Single Cut [illegible] take Pitsaw price
Round Grinding, " " " "
Round off " " " take Hooktooth price.
Tapers pointed at both ends [illegible] Double price
[illegible] Taper, as Flat or Hand edges

HORSE RASPS					Wood Rasps	CABINET.		SHOE RASPS	
Inch.	Plain.	Bev'l'd and ¾ Rasps	Tang'd	Half Round & Flat	Rasps.	Files.	Half Round & Flat	Oval.
6	[illegible]	[illegible]	[illegible]	$4 20	$[illegible] 0	$4 20	$4 [illegible]	$5.30
7	.	[illegible]	..	5 00	7 00	5 30	5 30	6.10
8		.	..	6 10	8 20	6 10	6 [illegible]	7.00
9				7.[illegible]	9 00	7 30	7 [illegible]	8 00
10	[illegible] 70	[illegible] 70	[illegible] 10	8 [illegible]	11 20	[illegible] 75	[illegible] 80	[illegible] 10
11	[illegible] 50	[illegible] 50	10 [illegible]	10 40	13 10	[illegible] 4	[illegible] 10	12 30
12	9.00	10 00	12 00	12 30	15 00	12 [illegible]	1[illegible] 50	11.00
13	10 70	11 [illegible]	14 00	14 50	17 20	14 [illegible]	11 [illegible]	.
14	12 70	14 00	16 [illegible]	16 [illegible]	[illegible] 70	16 [illegible]	13 [illegible]	.
15	15 00	16.50	19 [illegible]	19 50	22 [illegible]	19 [illegible]	.	..
16	17 60	19.40	23.00	22.50	25 00	22.50	.	.	..
17	20.50	22.50	[illegible]						..
18	23 [illegible]	26 [illegible]	.			..	.	...	

EXTRAS
File Rasps, Flat and Half Round, take Flat and Half Round Wood Rasp price
Wood Files, Flat and Half Round take Flat and Half Round Bastard price.
Last Makers Rasps and advance on Cabinet Rasp price.

EXTRAS (GENERAL).

One Round Edge advance ½ per cent., and Two Round Edges, 25 per cent. on respective Kinds and Cuts.
Blunt Files, not specified, advance one inch on respective Kinds and Cuts.
Dead Smooth, double the price of Bastard Cuts.
Equalings (Belhed), advance two inches on respective Kinds and Cuts.
Sizes Below Four Inches not excluded take Four inch price. Inches not specified take next higher full inch price
Rough, Coarse, Union Cut, Brass or other than Regular Cuts not specified, made upon Regular or Standard Shaped Blanks, advance one inch on respective Kinds and Cuts.
Single or Float Cut not specified on Regular Shapes, take Double Cut price.
Irregular Goods all lengths above those listed and Files varying from Standard Sizes to be classed as irregular and subject to special prices.

PATENT DOUBLE ENDERS.

Nos.	7	8	9	10
Files and Handles	$2.55	$2.80	$3.15	$3.70
Files only	2.40	2.60	2.90	3.40

CIRCULAR FILES.

5 inches in diameter by ½ inch face.

Cuts	Bastard	Smooth.	Super.	No. 4.	No. 6.
Each	$4.50	$5.00	$5.25	$5.75	$6.00

JEWELERS' FACING OR RUBBING FILES.

Length, 14 inch.; width, 1⅞ inch.; thickness, ⅜ inch. One side smooth-cut; reverse, dead smooth-cut.

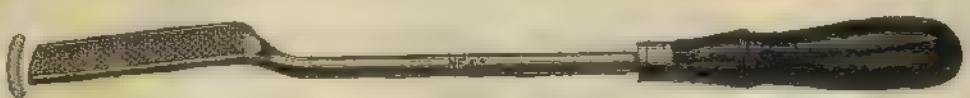
Price.....each, $1.75.

DENTISTS' RUBBER FILES.

	4½ in.	5¼ in.	6 in.
½-Round, with tang.....per dozen,	$2.65	$2.90	$3.14
½-Round, with handle..... "	2.77	3.03	3.38
	7½ in.	8 in.	9 in.
½-Round, double end.....per dozen,	$3.91	$4.35	$4.84
Oval, double end..... "	4.84	5.45	6.00

HORSE MOUTH RASPS.

Jointed Handle, nickeled.....Price each, $2.25



Long Handle, plain.....Price each, $1.00
Long Handle, nickeled..... " 1.70

No 323

Concave, with Jointed Handles, one side Concave Rasp Cut, other side Flat File Cut—
Nickel-Plated.....Price each, $1.25
Extra Cutters..... " .30

THE ELKINS SAW FILER AND CLAMP.

The Elkins Saw Filer and Clamp is a Vise, to which is fixed a File Handle moving through guides which can be instantly set to any pitch or bevel desired. The handle holding the file moves freely through the guide, making every tooth exactly alike in pitch and bevel.

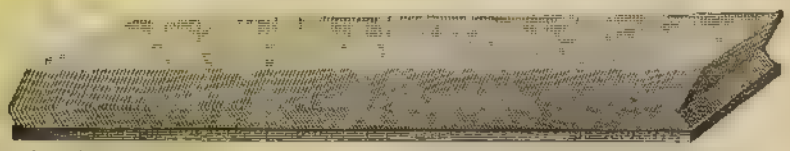
It is complete in itself; is always ready for use; is light, strong and durable, with no loose parts to get out of order or be lost. It can be packed in a small space when not in use, and is adapted to all kinds of saws, from the finest to the coarsest, except circular.

By its use the experienced saw-filer is enabled to save time and files, and to form the teeth with greater precision than by hand, while the inexperienced person is enabled to file equal to the best.

Price each..... $2.50.

FILE CARDING OR WIRE BRUSHES.

For Cleaning Files.



Handled (as in cut) white wood.....per doz., $1.50 Each, 15c.
Not handled, superior quality ..... " 10c.
In rolls, with leather back; width, 1½ inches.....per foot, 25c.

FILE CLEANERS.

Superior Quality.

File Card.

File Brush and Card.

The scorer is made of soft iron, and is used to remove the "pins" which fill up and clog the teeth causing scratches in the work if not removed. The Brush will be found a most efficient annex to the card, especially upon finer files, removing the filings much more effectually than can be done by the card alone.

The card cloth for these Cleaners is firmly fastened to the handle (in a recess) with glue which holds it upon its edges as well as at its bottom. The scorer is held in a recess provided for its reception by a spring, and while out of the way when not needed, is always ready for use. The hole in the handle is so shaped as to admit of the scorer being removed with ease, and is also constructed so that the card or brush may be hung up when not in use.

File Brush and Card.....per dozen, $4.40 Each, 45c.
" Card, with Scorer..... " 2.50 " 25c.

PATENT FILE CLEANERS.

Steel Back and Frame.
Superior to any File Card heretofore produced.

No. 1, without Picker..... per doz., $2.00
No. 10, with Picker and Hardened Steel Wire..... " 2.50

AUGER BIT FILE.

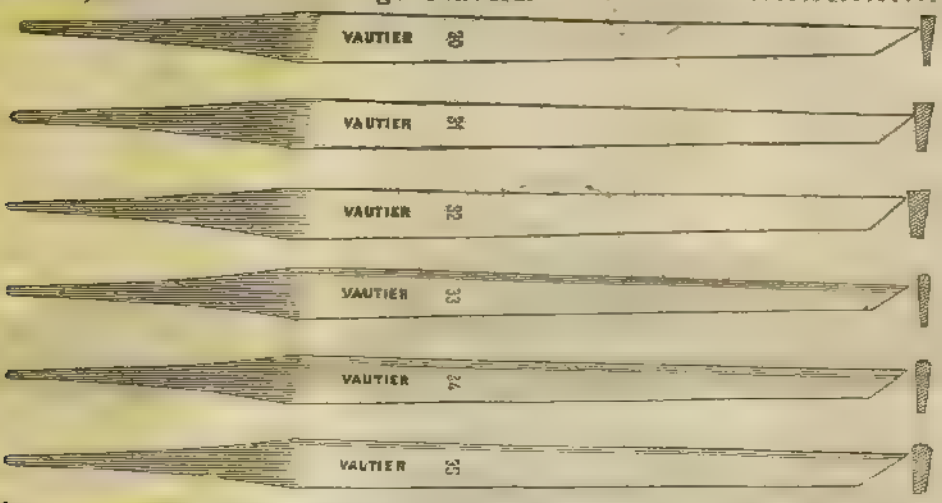
This is the only File ever invented to file all sizes of Auger Bits without filing the screw and lip away, and spoiling your tool.

Price..... .per dozen, $1.50.

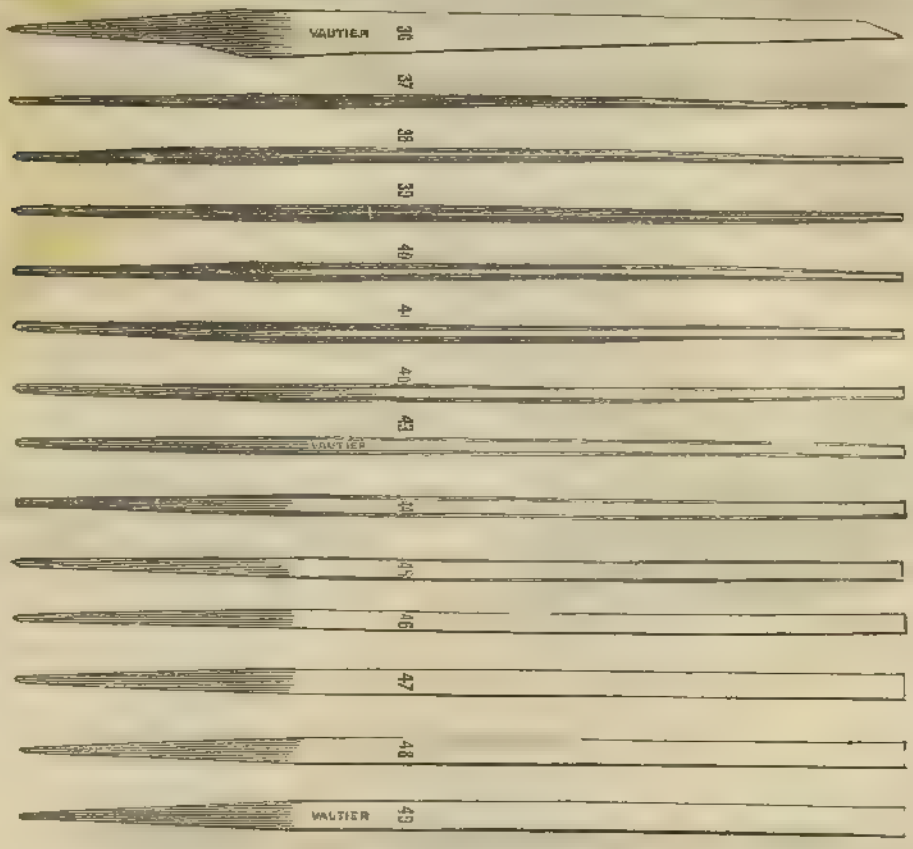
VAUTIER TOOLS.

S. VAUTIER & FILS.
(TRADE MARK.)

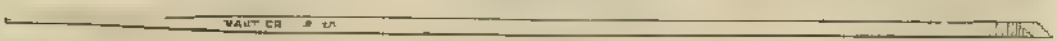
Narrow Back, Flat and Round Edge Gravers. Per Dozen.....$1.00



Flat Edge. Per Dozen.....$1.00



Square.

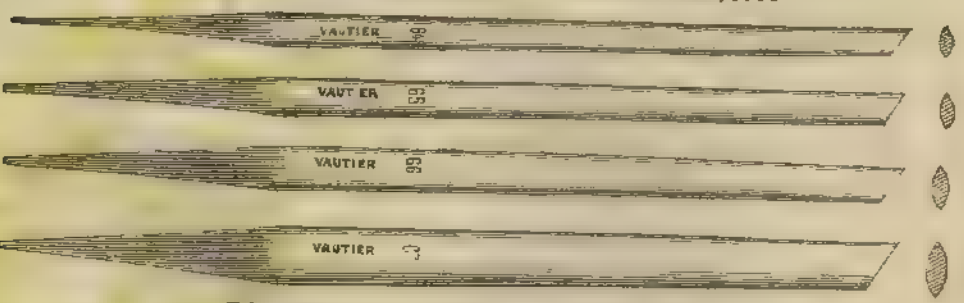


Bright, Nos. 1 to 8.....$1.38 per Dozen.
" " 9 to 12..... 1.62 "
Black, " 13 to 16..... 1.50 "

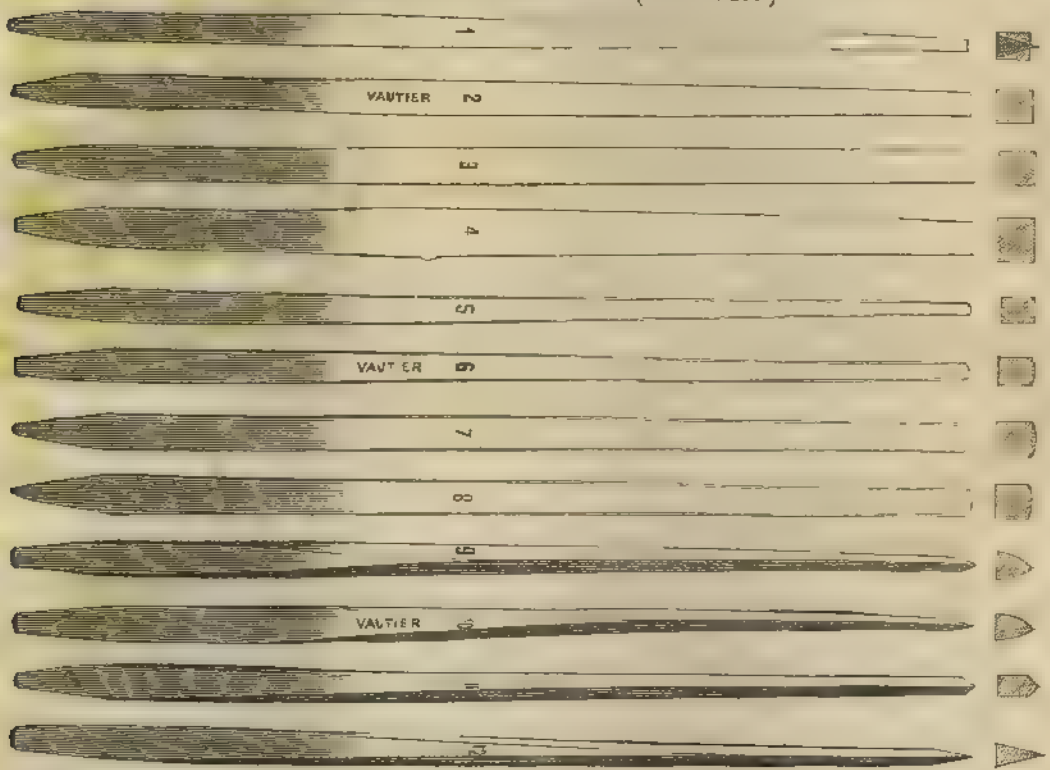
Black, Nos. 17 to 19.....$1.75 per Dozen
" " 20 to 24..... 2.00 "

VAUTIER'S TOOLS.—CONTINUED.

Oval. Per Dozen..... $1.00



Die Sinkers' Gravers. (12 to a set)



The above to be used with a hammer. Price of above set $1.75

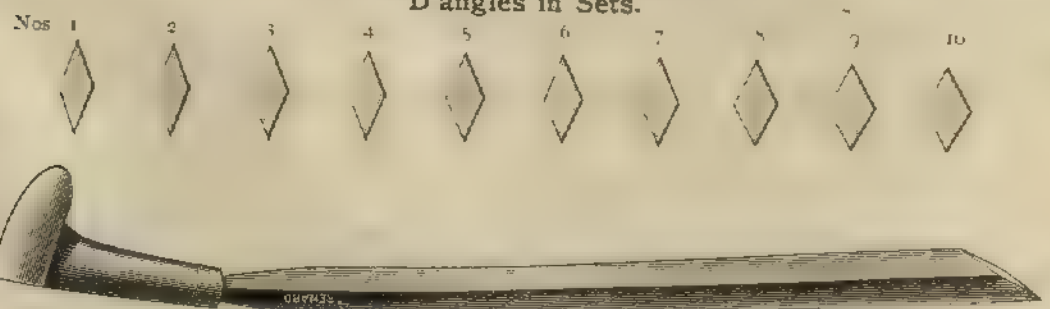
RENARD'S ENGRAVER'S TOOLS.

Similar in sizes and shapes to Vautier's.

Lozenge, Square, Knife, Flat, Round and Onglettes Per dozen ... .$1.20 Each.. . $0.12

RENARD'S GRAVERS.

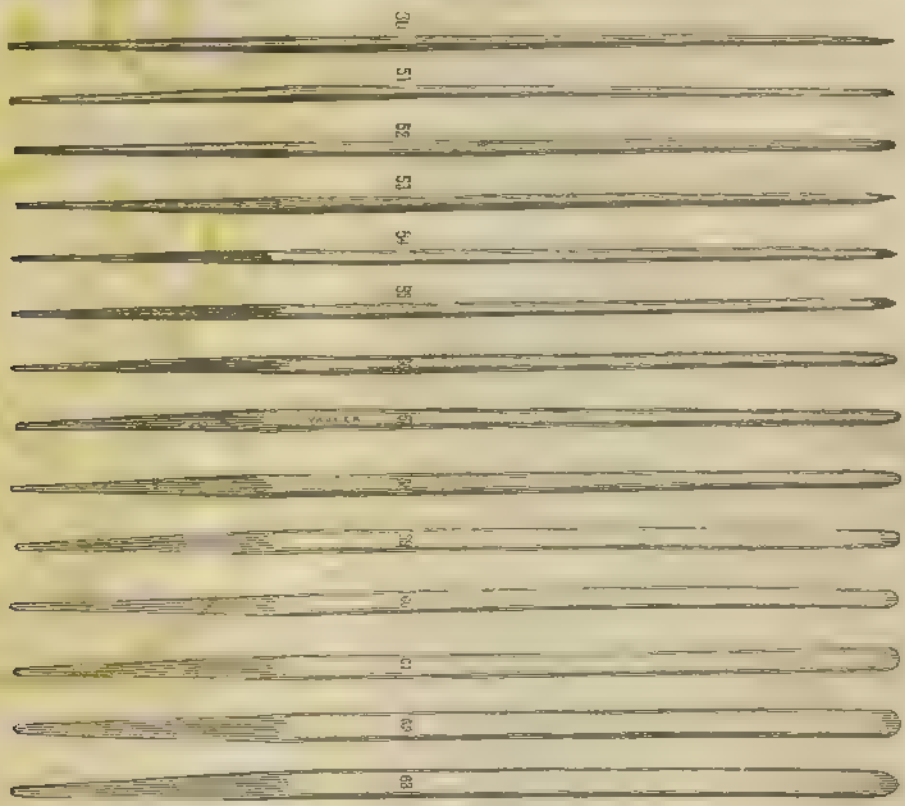
D'angles in Sets.



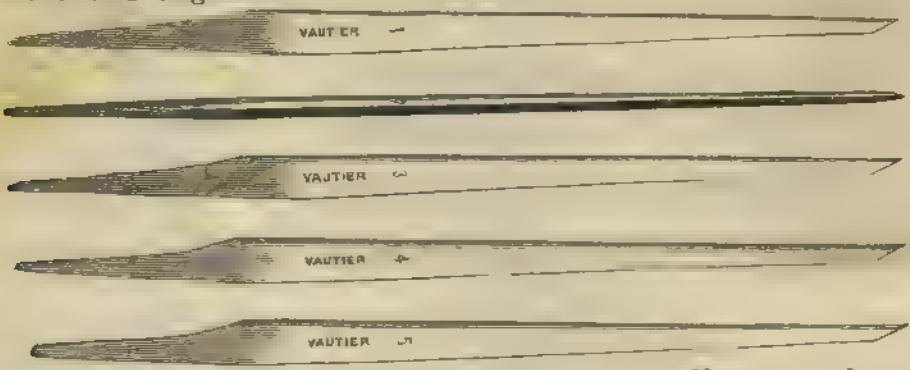
Sets of 10, Nos. 1 to 10, graded, marked, sharpened, and handled .... .per set, $4.25
Without handles.....per dozen, $3.75 | Each..... 35

VAUTIER'S TOOLS.—CONTINUED.

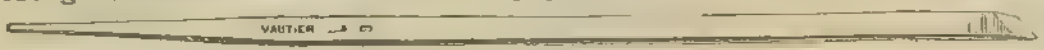
Round Edge Gravers. Per Dozen.....$1.00



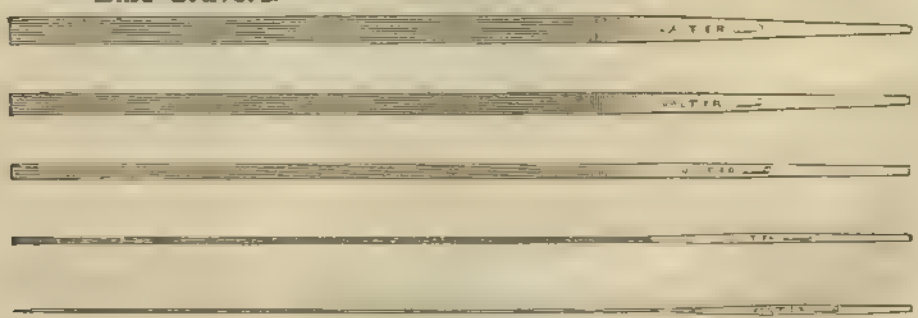
Knife, Bevel and Onglette. Per Dozen $1.00



Lozenge Gravers. Nos. 0 to 8, $1.50 per doz. Nos. 9 to 12, $1.75 per doz.



Line Gravers. Per Dozen.....$4.00



Grade of Cut, Nos. 6 to 50. Grade of Width, 2 to 12 lines. Per Dozen $4.00
No. 6, Finest Line.

"LITTLE GIANT" GRADUATED TIRE WHEELS.

A perfectly true running wheel. Has cherry wood handle. Other parts are made of malleable iron, finely polished. A durable and convenient tool for measuring lengths of tires accurately. The pointer is held in place by friction, so that it can be set instantly, and will not get loose. The whole is made of metal, is light, accurately made, and strong. The circumference of wheel is exactly two feet, graduated by one-eighth of an inch.

Graduated..... $1.50
Plain..... 1.25

"LITTLE GIANT" HORSESHOERS' BUTTERIS.

This useful tool will be highly appreciated by all horseshoers. Perfect in design, strong, durable and cheap. Handles adjustable to length. Knives replaceable. Malleable iron brace highly polished.

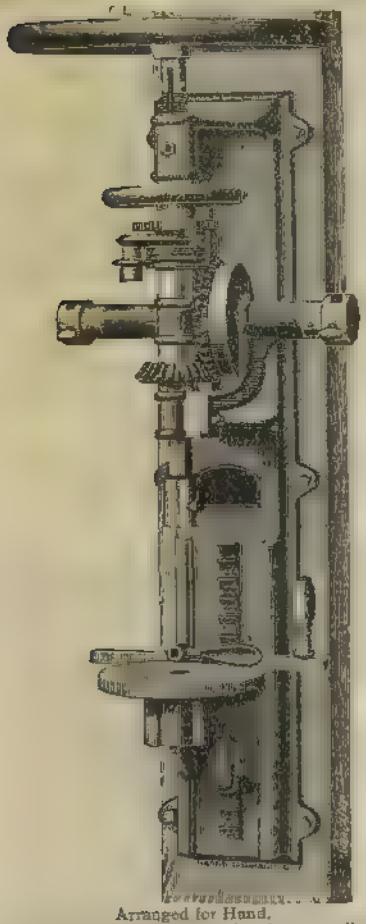
Butteris, with Ebony Handle....$1.50
" " Crutch " 1.50
Extra Knives..... .25

Making it the cheapest Butteris for repairs in the market.

Ebony Wood Handle.

Malleable Iron Handle.

"LITTLE GIANT" UPRIGHT DRILLING MACHINES.



Arranged for Hand.

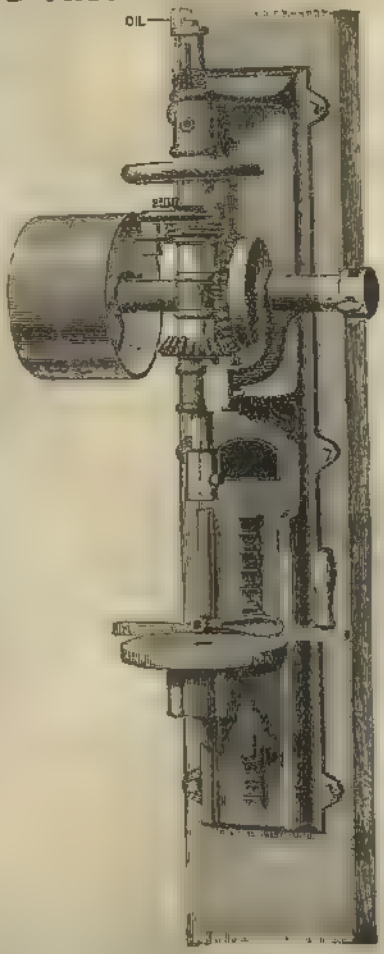
Use left hand crank for large drills. The power is multiplied 1½ times.
Use right hand crank for small drills. The speed is multiplied 1½ times.

These illustrations give a fair idea of our New "Little Giant" Blacksmiths' Drilling Machines, as arranged for hand or power. We desire to say this, that although we have put the price of these machines low, that nothing has been neglected to make them the most perfect, compact and thoroughly well-made Drill in the market.

Weight of these machines, 150 lbs. Drills from ⅛ to 1¼ inch hole. Drills to center of 14 inch circle. Has three changes of feed. Feed equally continuous on all changes. Spindle self-lubricating by filling reservoir at top of same. Table is removable for drilling tire, and instantly adjustable to height. The frame is of iron, cast in one piece, giving machine strength and stiffness. Spindle is steel, with steel set screw. Table is perfectly square with spindle. The feed has a run of 4 inches. The table has an adjustment of 16 inches. On power machines pulleys will not interfere with use of hand crank. Spindles are made to receive ½ inch or ⅝ shanked drills as ordered. Unless ordered otherwise, ½ inch hole will be sent. All parts are interchangeable. Bed of machine is perfectly square with spindle.

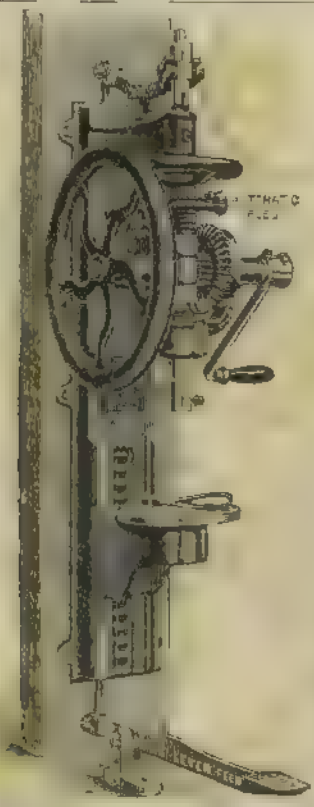
"Little Giant" arranged for

Hand, with straight table..$18.00
Power, " " " .. 21.00
Hand, " swinging " .. 20.00
Power, " " " .. 23.00



Arranged for Power.

Weight of this Machine, 150 lbs.



No. 10 G

LITTLE GIANT DRILLING MACHINES

No. 10 G.

With Automatic and Foot Lever Feed.

Drills with swinging table sent, unless otherwise ordered. Weight of machine 175 lbs. Drills to 1¼ inch diameter hole. Drills to center of 14-inch circle. Spindles furnished with ½ inch or 41-64 diameter holes. ½ inch hole sent on all orders unless otherwise ordered.

Price complete $23.00
With straight table (as shown in cut.)

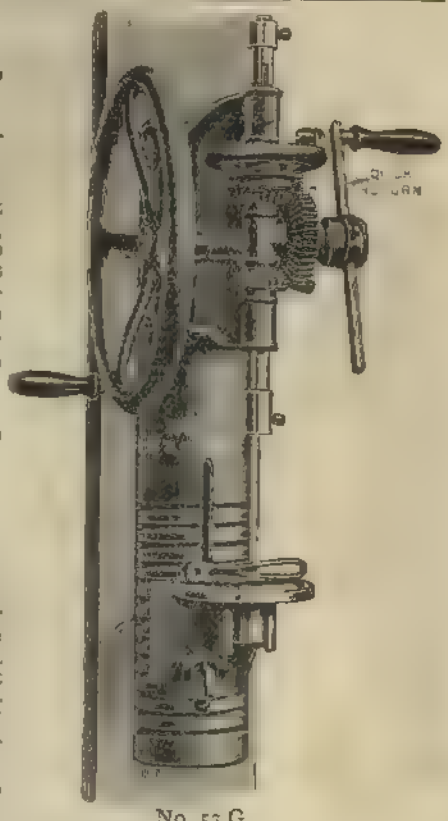
Price complete $25.00
With swinging table.

No. 53 G.

Quick Return.

Drills to 1 inch diameter hole. Drills to center of 15 inch circle. Table is removable for drilling tire, or swings to side. Adjustable to height. Feed has a run of 4 inches. Table has an adjustment of 11 inches. Spindles are furnished with ½ or 41-64 holes. ½ inch sent unless otherwise ordered

Price..... $12.00



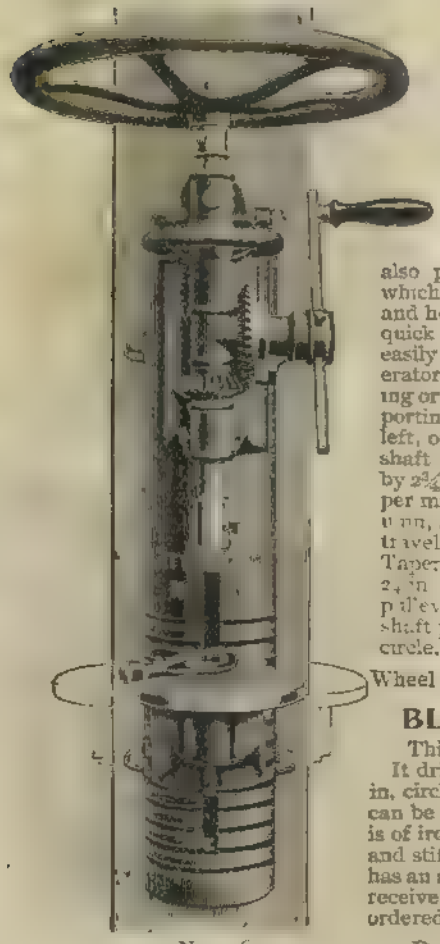
No 53 G.

POWER POST DRILL.

No. 727.

This drill is designed for the use of carriage and wagon makers. It has cut gearing and all parts are well made and closely fitted, thus adapting it to light machine shop practice. Spindle has long feed lever for heavy work, and a short one for light work and quick return. It is counterbalanced by a weight in the hollow column, and the lever is balanced by a weight at its lower end, as shown, which serves to carry it to an upright position out of the way of the operator after use. The feed lever is also provided with our patented stop latch, which serves to disconnect it from the spindle and hold to upright position when using the quick return lever. Drill table is quickly and easily raised or lowered by one hand of the operator from his position at the drill either standing or sitting. The table revolves in the supporting arm, and may be swung to the right or left, out from under the drill spindle. Countershaft has tight and loose pulleys, 8 in. diameter by 2¾ in. face, and should make 200 revolutions per minute. Height of drill, 60 in. Dia. column, 4½ in. Dia. spindle, 1 3-16 in. Vertical travel, 6 in. Spindle bored for No. 2 Morse Taper. Greatest distance from spindle to table 24 in. Dia. large pulley on cone 7 in. Small pulley 3 in. Cones carry 2 inch belt, countershaft pulleys, 2 in. Drills to center 15 in. circle. Price, complete with countershaft, $60 00

Wheel holding attachment, extra..... 2.00

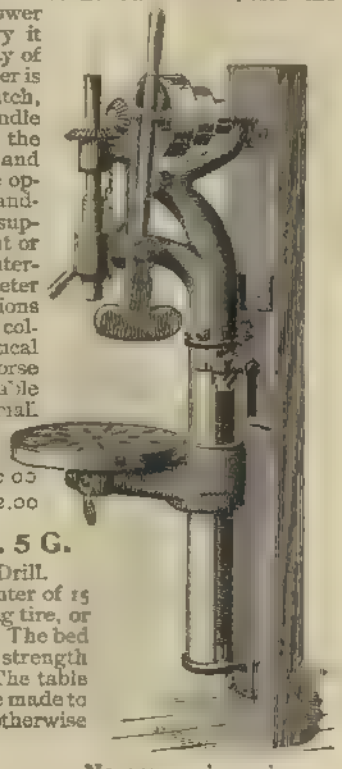


No 5 G.

BLACKSMITH DRILL, No. 5 G.

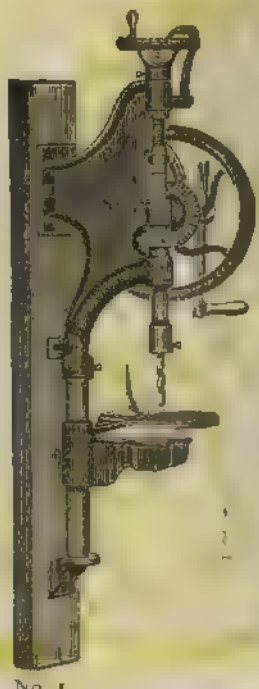
This cut shows our No. 5 G Blacksmith Drill. It drills to 1 inch diameter hole and to center of 15 in. circle. The table is removable for drilling tire, or can be swung to side. Adjustable to height. The bed is of iron, cast in one piece, giving machine strength and stiffness. The feed has a run of 4 in. The table has an adjustment of 11 in. The spindles are made to receive ½ or 41-64 shanked drill. Unless otherwise ordered, ½ inch hole will be sent.

Price..... $10.00



No. 727. 19 in. swing.

UPRIGHT DRILLS. No. 1.



No. 1.

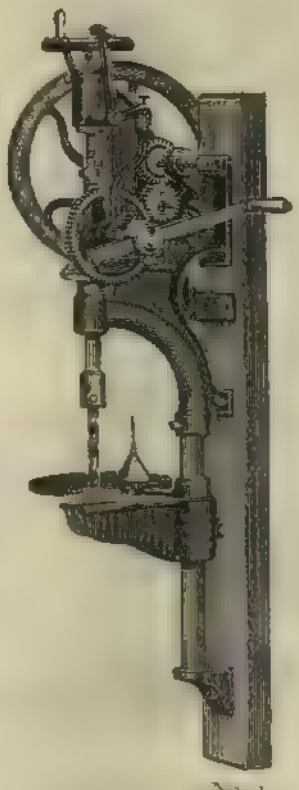
Will drill from ⅛ to 1 inch hole. Diameter of spindle, 1⅛ inches. Length, 12 inches. Will drill hole to center of 11 inch circle, 2½ inches deep. Greatest distance from spindle to table, 12 inches. The Drill Socket screws on to the spindle and takes Drills with ½ inch round shank. It can be removed and our 2 inch Universal Chuck put on in its place. The Universal Chuck would be extra. This Drill has a positive automatic feed, which can be adjusted to four rates of speed. It has swing table 8 inches diameter, also a grinding attachment, with rest for grinding the bit correctly.

Length, 47 inches; weight, 115 lbs.

Complete . . . $28.00 | Without Grinder..$25.00

The grinding attachment is a solid emery wheel 6 inches diameter, ½ inch face, driven by friction from balance wheel; is brought into use by tightening of a thumb screw; it also provides an angular rest for grinding the Drill bit correctly.

No. 2.



No. 2.

Will drill from ⅛ to 1¼ inch hole. This machine is designed for general blacksmith work. Diameter of spindle, 1⅛ inch. Length, 22 inches. Will drill a hole to center of 11 inch circle, 2½ inches deep. Greatest distance from spindle to table 22 inches. The Drill Socket screws on to the spindle, and takes drills with ½ inch round shank. It can be removed and our 2 inch Universal Chuck put on in its place. This Drill has the automatic feed and swing table, 9 inches diameter, the grinding attachment and a wheel holder. The crank can be changed to balance wheel shaft, giving more power for heavy drilling. Crank has forward motion on both shafts. Balance wheel shaft can be disconnected by slipping intermediate gear.

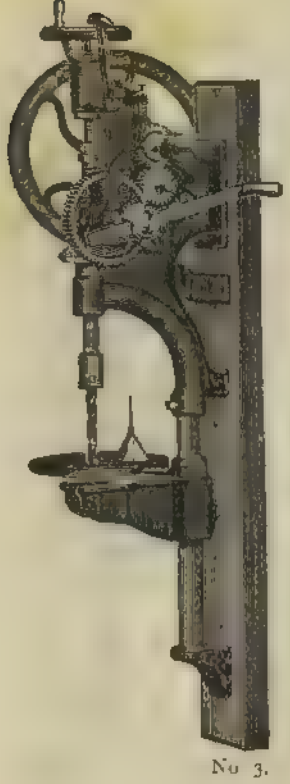
Length, 57 inches; weight, 145 lbs.

Complete . . . $38.00 | Without Grinder..$35.00

The wheel holder is for drilling tires without resting on the felloe, which is desirable in case of nicely painted work, and all the holes can be drilled without lifting the wheel.

Wheel Holder, $1.50 extra.

No. 3.



No. 3.

Will drill from ⅛ to 1½ inch hole. This machine is designed for carriage makers and heavier blacksmith work. In general design it resembles the No. 2. It is built heavier and has larger capacity. Diameter of spindle, 1⅜ inch. Length, 15 inches. Will drill hole to center of 16 inch circle, 4½ inches deep. Greatest distance from spindle to table 22 inches. The Drill Socket screws on to spindle, and takes drills with ¾ inch round shank. It can be removed, and our 2½ inch Universal Chuck put on in its place. The Universal Chuck would be extra. This Drill has the automatic feed, a swing table 11 inches diameter, the grinding attachment, and a wheel holder. The crank can be changed to balance wheel shaft, giving more power for heavy drilling. Crank has forward motion on both shafts. Balance wheel shaft can be disconnected by slipping intermediate gear.

Length, 66 inches; weight, 200 lbs.

Complete.....$48.00 | Without Grinder..$45.00

No. 4.

No. 4.

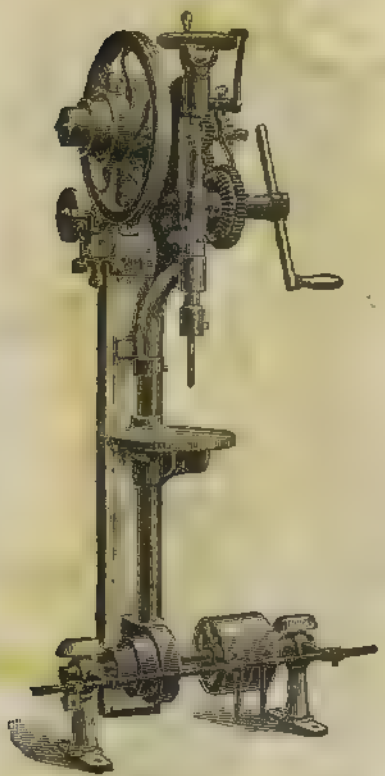
Will drill from ⅛ to 2 inch hole. This machine is designed for the heaviest of hand drilling. It is built heavy and is powerful in gearing. Diameter of spindle, 1½ inches. Length, 18½ inches. Will drill hole to center of 20 inch circle, 6 inches deep. Greatest distance from spindle to table, 25 inches. The Drill Socket screws on to the spindle, and takes drills with ¾ inch round shank. It can be removed and our 2½ inch Universal Chuck put on in its place. The Universal Chuck would be extra. This Drill has the automatic feed, a swing table 15 inches diameter, the grinding attachment, and a wheel holder. The crank can be changed to either of the three shafts, and the gearing can be used or not at the option of the operator. The gearing gives six revolutions of crank to one of spindle. The table arm is held in position on post by a ratchet and pawl, and cannot slip.

Length, 71 inches; weight, 320 lbs.

Complete.....$93.00 | Without Grinder..$90.00

UPRIGHT DRILLS.

Nos. 5 and 6.



Nos. 5 and 6.

These machines are our Nos. 2 and 3 Drills, arranged for power. The balance wheel shaft is lengthened, and has a three-step cone pulley for 1½ inch belt. The counter-shaft with hangers, has a three-step cone pulley, and 7 inch tight and loose pulley for 2½ inch belt.

Weight of No. 5....200 lbs.
Complete..... ....$55.00

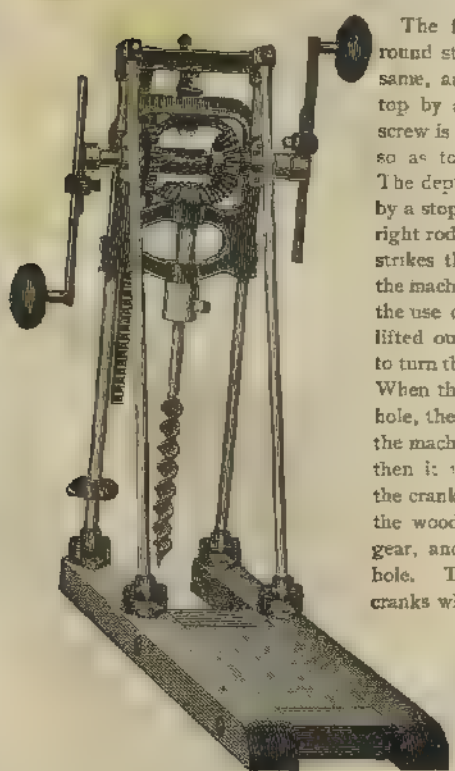
Weight of No. 6....255 lbs.
Complete..... ....$65.00

We also furnish Nos. 5 and 6 Drills with tight and loose pulleys, 7 inch, 2½ inch face, applied to balance wheel shaft.

No. 5, with tight and loose pulleys.....$43.00

No. 6, with tight and loose pulleys.....$53.00

BORING MACHINES.

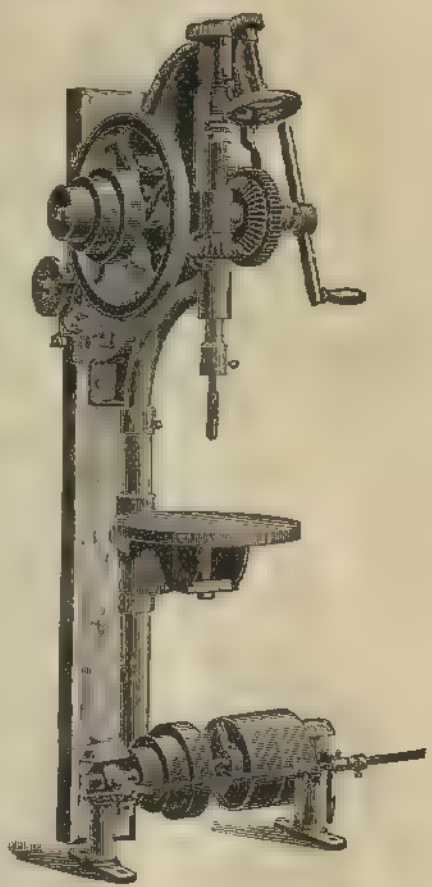


The frame is made of half-inch round steel rods; the braces are the same, and attach to the rods at the top by a set screw. When this set screw is loosened, the frame falls over so as to bore at any desired angle. The depth of hole to be bored is fixed by a stop as seen on the left-hand upright rod in the cut. When the frame strikes this stop, a latch is lifted and the machine throws itself into gear by the use of a spring, and the auger is lifted out of the hole by continuing to turn the crank in the same direction. When the auger is drawn from the hole, the frame hangs itself up until the machine is moved to the next hole; then it is dropped down by turning the crank back until the auger strikes the wood, when it is thrown out of gear, and proceeds to bore the next hole. The machine has adjustable cranks which fully regulate its speed and power. The gears are all cut, which is not common in other machines.

Machine, without Augers.....$7.50

UPRIGHT DRILLS.

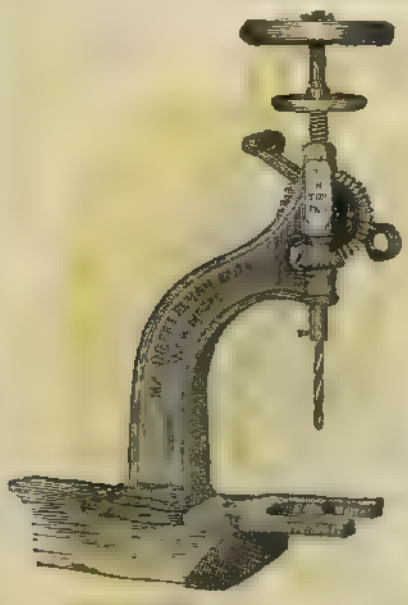
No. 7.



No. 7.

This machine is our No. 4 Drill, arranged for power, and is designed to take the place and do the work of more expensive Power Drills. It has a three-step cone for 2 inch belt, which, with the back gears, gives six changes of speed. The table is clamped to arm, and can be used at the extreme edge without tipping, and the arm is held in position on post by means of a collar and ratchet, and will not slip. The countershaft, with hangers, has a three-step cone for 2 inch belt, and tight and loose pulleys 8 inches in diameter, 2½ inch face.

Weight.... ....380 lbs.
Complete.....$110.00



NEW UPRIGHT BENCH DRILLS.

No. 1.

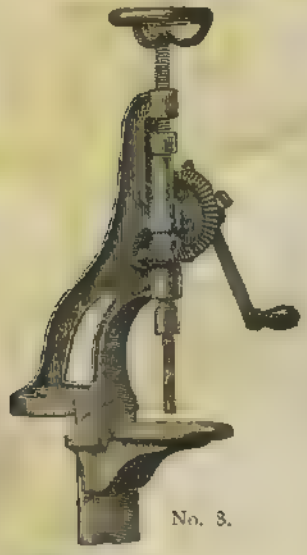
Total height, about 24 inches; weight, 31 pounds, and capacitated to drill from the smallest up to a ¾-inch hole. Run of screw, 3½ inches; screw, wrought iron, nicely fitted into solid cut iron thread in the frame.

Each..... $6 50

No. 2.

Height, 28 inches; weight, 55 pounds. Drills from ⅜ to ⅞ inch hole and to center of a 9-inch circle. The feed has a run of 3½ inches; all shafts and screws are best steel. The chuck is made for a ½-inch drill shank.

Each..... $8 00



No. 8.

UPRIGHT BENCH DRILLS.

No. 8.—Drills ⅜ to ¾ inch hole. Length, 33 inches; weight, 55 pounds.

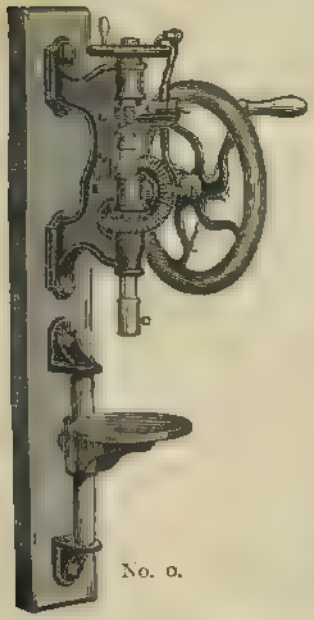
Each..... $12.00

No. 9.—Drills ⅜ to 1 inch hole. Length, 33 inches; weight, 75 pounds.

Each..... $15.00

Spindles of above sizes are bored to receive ½ inch straight-shank drills; have hand feed; drill holes in center of 10-inch circle. These drilling machines will be furnished, when so ordered, with a neat, strong drill chuck, fitted to spindle, holding drills from $\frac{1}{32}$ to ⅝ inch; each, $3.00. Larger size, holding drills from $\frac{1}{32}$ to ¾ inch, each, $3.50. The use of these chucks makes a great saving in price of small drills.

No. 9.



No. 0.

UPRIGHT SELF-FEEDING DRILLS.

No. 0.

This drill is fitted for a No. 2 Beach Chuck, or can be used without.

Drills from $\frac{1}{16}$ to ⅝ inch hole. Length, 26 inches. Weight, 30 pounds.

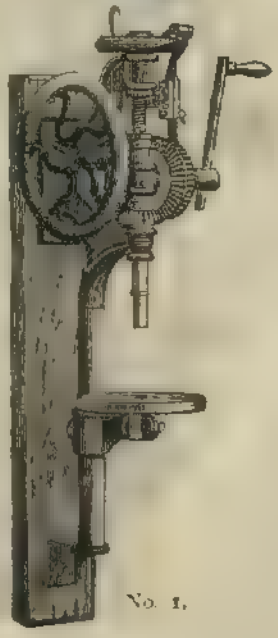
Without Chuck.....each, $20.00

No. 1.

Drills from ⅜ to ¾ inch hole. Length, 42 inches. Weight, 98 pounds.

Each, ... $28.00

With Pulleys, for power..... 31.00



No. 1.

UPRIGHT SELF-FEEDING DRILLS.

No. 1½.

No. 1½.

This machine has nearly a continuous feed, which may be quickly adjusted by a thumb-screw to three rates of speed. A fast or slow motion may be given the drill by changing the handle from shaft *A* to shaft *B*. By this arrangement the capacity of the drill has been increased nearly a third. Will drill to the center of a 10-inch circle. Length, 44 inches. Weight, 120 pounds.

Each.....$34.00
Arranged for power, with pulleys..... 37.00

Arranged for power, with one pulley in place of balance wheel, without extra charge.

One pulley, with balance wheel....extra, $1.50

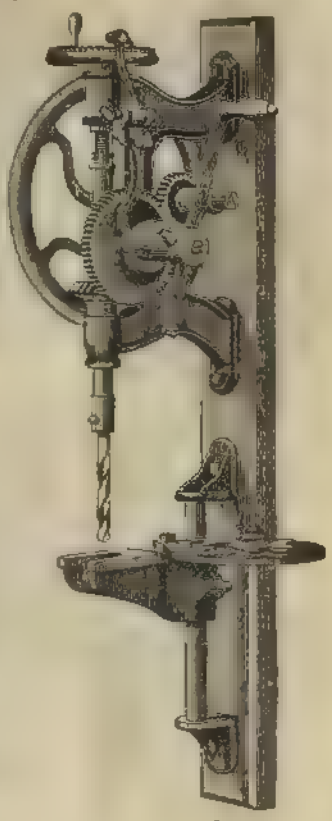
No. 2.

No. 2 is similar to No. 1½, and has all the late improvements. The swing table will be found useful in many ways, and much more convenient than driving them in and out with a hammer. It is out of the way when not in use, and may be quickly swung into position when wanted. Will drill to the center of a 15-inch circle. Drills from ⅜ to 1¼ inch hole. Length, 54 inches. Weight, 160 pounds.

Each.....$48.00
Arranged for power, with pulleys..... 52.00

Arranged for power, with one pulley in place of balance wheel, without extra charge.

One pulley, with balance wheel....extra, $1.50

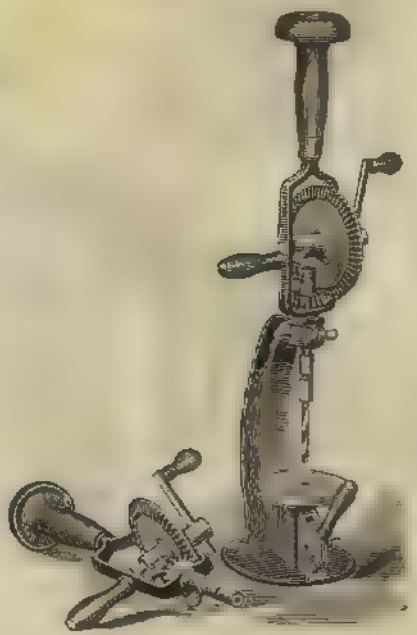


No. 2.

No. 3.

Drills 1¼ to 1½ inch holes in center of a 19-inch circle. Weight, 250 pounds.

Without Pulleys.....each, $75.00 ; With Pulleys.....each, $79.00



COMBINED BREAST AND UPRIGHT DRILLS.

This cut represents the breast drill in one position, and in the other an upright lever drill, making a light, useful tool suitable for a variety of small work. When the stand is fastened to a bench, the table can be raised by foot-power, giving operator one hand to manage his work while the crank is being revolved by the other. Spindle is of steel; has hole for ¼-inch shank drills; end of spindle is tapered to fit small chucks for wire drills. Length from base to top of handle, 25½ inches.

Breast Drill, without Stand.....each, $4.00
Stand, with Rise-and-Fall Table..... " 4.00

No. 1½ UPRIGHT DRILLS.

Double Geared.

Will drill from ⅛ to 1½ inch hole. This Drill is heavier and of larger capacity than No. 1. Diameter of spindle, 1⅜ inches. Length of spindle, 12 inches. Greatest distance from spindle to table, 12 inches. The Drill Socket screws on the spindle and takes drills with ½ inch round shank. It can be removed and our 2 inch Universal Chuck put on in its place. The Universal Chuck would be extra. It has a positive automatic feed, which can be adjusted to four rates of speed. It has swing table 8 inches diameter, also a grinding attachment with a rest for grinding the bit correctly.

Total height, 47 inches; weight, 120 lbs.

With grinder	$35.00
Without grinder	32.00
With tight and loose pulley and grinder	40.00
" " " without "	37.00
" counter-shaft and grinder	52.00
" " without grinder	49.00

Delivered free on board.

All goods shipped C.O.D., etc., unless otherwise ordered.

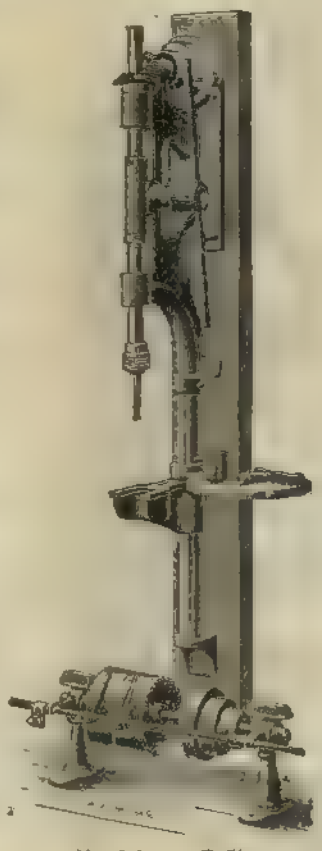
No. 1½ Upright Drill

No. 8 POWER DRILLS.

Lever Feed.

Diameter of spindle, 1⅛ inch. Length of spindle, 28 inches. Will drill hole to center of 16 inch circle, 5¼ inches deep. Greatest distance from spindle to table, 23 inches. Vertical movement of table, 17¾ inches. The Drill Socket screws on the spindle and takes drills with ¾ inch round shank. It can be removed, and our 2½ inch Universal Chuck put on in its place. The Universal Chuck would be extra. This Drill has lever feed, which can be adjusted to any position of the Drill. The counter-shaft, with hangers, has a three-step cone pulley, and a 7 inch tight and loose pulley, for 2½ belt.

Weight	200 lbs.
Price	$70.00



No. 8 Power Drill.

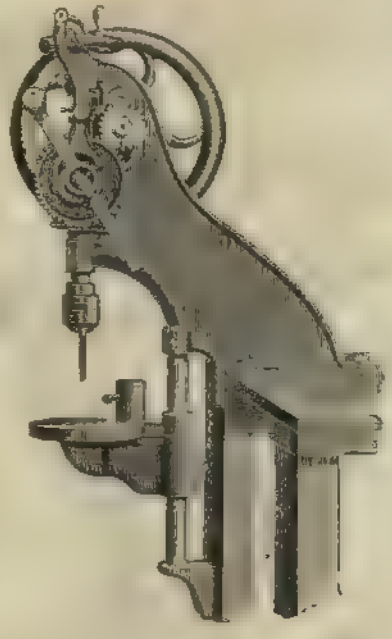
BENCH DRILLS.

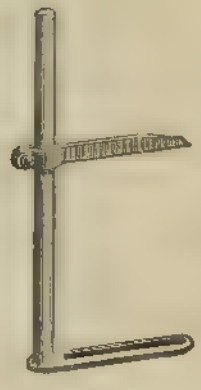
Diameter of spindle, 1⅛ inch. Length, 15 inches.

Will drill a ¾ inch hole to the center of a 10 inch circle, 2 inches deep.

Drill Socket takes ⅜ inch round shank.

Diameter of table	7 inches.
Total length	38 "
Weight	90 lbs.
Price	$20.00





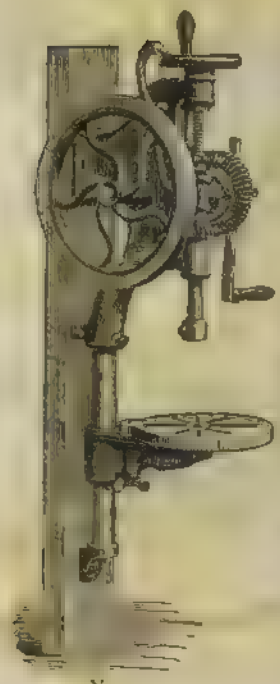
DRILLING POSTS.

For use with Ratchet Drills.

This is a very handy and useful article to use in connection with Ratchet Drills, and will meet the wants of every machine shop and worker in iron. It is made of wrought iron, the post is turned for the swinging arm, and the foot is planed square, and has a slot in its full length for bolting down.

	No. 1.	No. 2.
Height of Posts	20 in.	26 in.
Radius of Arms	10 "	12 "
Each	$8.00	$10.00

No. 12 ADVANCE DRILL.



No. 12.

This Drill has very long, heavy bearings, which are well babbitted and cannot spring or get out of line. The Automatic Feeding Device is of the very latest improved mechanical construction, and is entirely out of the way of the operator, being located behind the spindle, and worked by a cam on inside of main gear wheel. This cam is so constructed as to give nearly a continuous feed, and does not jam the drill into its work all at once, thus avoiding breakage of bits. It also has two speeds which can be obtained instantly by changing handle from one shaft to the other.

Sizes and Dimensions.

Size of spindle, 1 inch; run of spindle, 3 inches; size of column, 10-16 inches, greatest distance of spindle to table, 1 3/4 inches; spindle turns 11/2 times to one turn of crank on fast speed, crank turns 1 1/2 times to one turn of spindle on slow speed, drills to center of 15 inch circle and up to 1 1/4 inch holes; spindle bored for 1/2 inch shank drills, unless otherwise ordered. Weight, 125 lbs.

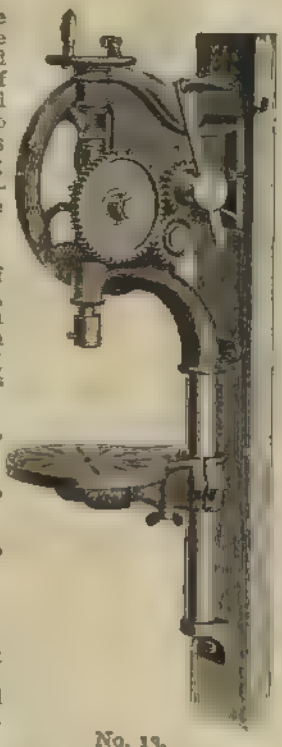
Price..... $10.00

Tight and loose pulleys for power instead of fly wheel, extra..... 3.00

Chucks to take square shank or bit stock drills, extra..... 1.00

No. 13 ADVANCE DRILL.

This Drill is similar in construction to the No. 12, except it is double backed geared, as shown in the illustration. The crank can be changed from main gear to fly wheel shaft, as shown, in an instant, for drilling large holes, and when thus used the crank turns in the proper direction.



No. 13.

Sizes and Dimensions.

Size of spindle, 1 1/2 inches; run of spindle, 3 inches; size of column, 2 inches; greatest distance of spindle to table, 16 1/2 inches; spindle turns 1 1/2 times to one turn of crank on fast speed, crank turns 1 1/2 times to one turn of spindle on slow speed, drills to center of 16 inch circle and up to 1 1/4 inch holes; spindle bored for 1/2 inch shank drills unless otherwise ordered. Weight, 175 lbs.

Price..... $16.00

Tight and loose pulleys for power instead of fly wheel, extra..... 3.00

Chucks for holding square shanks or bit stock drills, extra..... 1.00

No. 14 ADVANCE DRILL.

The No. 14 Advance is similar in all respects to the No. 13, but much larger and heavier.

Sizes and Dimensions

Size of spindle 1 1/2 inches, run of spindle, 3 inches; size of column, 2 3/4 inches; greatest distance of spindle to table, 19 1/2 inches, spindle turns 1 1/2 times to one turn of crank on fast speed, crank turns 1 1/2 times to one turn of spindle on slow speed, drills to center of 22 inch circle and up to 1 1/2 inch holes; spindle bored for 1/2 inch shank drills unless otherwise ordered. Weight, 240 lbs.

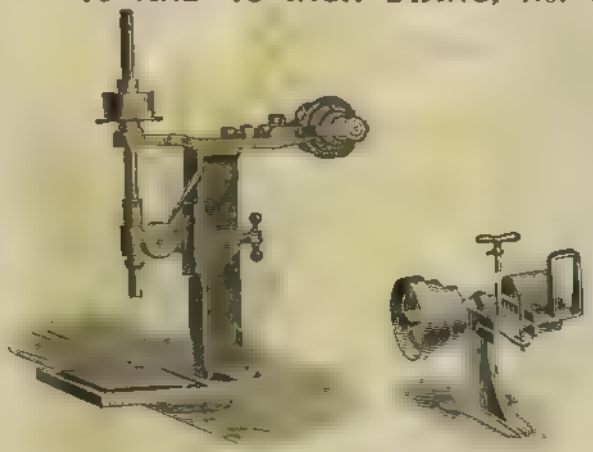
Price..... $25.00

Tight and loose pulleys for power instead of fly wheel, extra..... 3.00

Chuck to take square shank or bit stock drills, extra..... 1.00

Never buy any Tools or Supplies until you have a written estimate from Montgomery & Co. They are always the cheapest, quality considered.

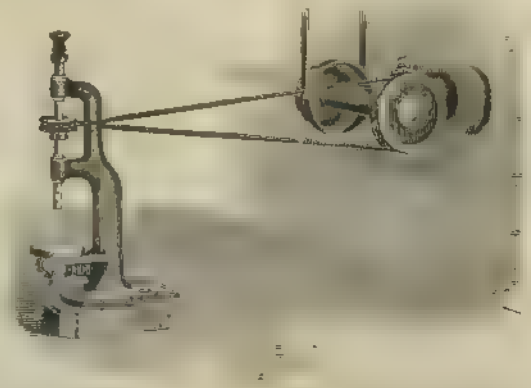
10 AND 13 INCH SWING, No. 1, SENSITIVE BENCH DRILLS.



This cut illustrates a style of drill made for use on the bench. The post, top and drill head is that of either the 13 or 10 inch swing drill, mounted on a substantial table which is provided with groove for oil drip. This table is designed to bolt to the bench as shown in the cut. With this drill is furnished an endless belt to drive the spindle, and a special countershaft, with cone pulley. The tight and loose pulleys on counter are 5 inches diameter, 2¼ in. face, and for ordinary work should run 350 turns per minute, giving with the three speeds on cone, speed of 1130, 640, or 378 turns per minute on spindle. The countershaft is interchangeable, end for end; a ⅞ round rod is used to connect shipper. The loose pulley and box of counter are self-oiling. Size of table, 10 inch swing drill, 9½ x 11; table, 13 inch swing drill, 11 x 11 inches.

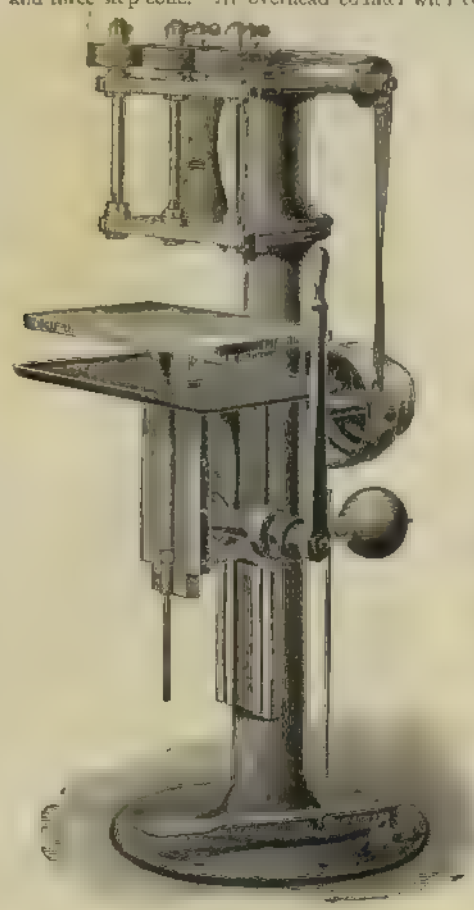
13 inch swing Bench Drill and Counter, $60.00
10 " " " " " " 54.00

No. 00 DRILLS.



This Drill is adapted to very light work. Drills No. 40 and smaller, can be used. It can be set on bench, and run from a wall countershaft, as shown, or if a number are required a light shaft with a number of driving pulleys can be used. By setting the top of driving pulley on the shaft somewhat higher than the center of the driven pulley on spindle, the tension of the belt will lift the spindle, and keep it at the point of its highest throw, and at the same time not in any way interfere with the down feed. The spindle is 4 sixths drill rod. It runs in brass bushings, which can easily be renewed in case of wear. The button runs loose on stud [illegible] top end of spindle; the lower end has taper hole for [illegible] shank. Table, 3 inches in diameter, swing to center, 4½ inches. Pulley on spindle, 1½ inches diameter, grooved for ⅜ round belt. Wall counter has 4 inch diameter grooved pulley, and three step cone. An overhead counter with corresponding cone and pair of tight and loose pulleys 4 inches in diameter, 1¼ face, which, for ordinary work should make 200 revolutions per minute, this giving a range of spindle speed from 1100 turns for slow to 1800 turns for fast speed.

Drill	$12.00	Overhead Counter	$6.00
Wall Counter	4.00	Complete	22.00



ENDLESS BELT
THREE SPINDLE DRILLS.

This tool is one that overcomes the most serious forms of annoyance that are common to all multiple or gang drills in general use. As will be seen, the feed is by foot or hand, the work being brought up against the drills. The arrangement of the table is similar to that used in drills of this class, is adjustable vertically on column, counterbalanced by weight, has stop for depth gauge, and adjustable rod to aid in lowering and raising the arm that table slide runs in. The method of driving spindles is new. The one as utilized on the Sensitive Drills, an endless belt. The belt used in the machine is 18 feet long, and is in contact with from one-half to two-thirds of the circumference of spindle pulleys. The spindle in lower bearing is 1⅝ inches in diameter. It runs in a gun-metal box with nuts for take up. It will drill holes from ⅝ inch to 0. We claim superiority for this drill on the following points over any similar drill made: endless belts; adjustable tightening pulleys; belt contact with spindle pulleys; belt tension; no flying lace ends or oil; smooth running; stiffness of frame; no lateral strain on spindles; even wear on boxes.

Also, favorable comparison with any make as to size of table; size of spindle swing of drill; amount of vertical adjustment to table; handy adjustment of hand and foot lever; economy of belts; variation of speed; general handiness of design; price considered with reference to capacity.

Greatest distance from lower end of spindle to table, 19 inches. Shortest distance from lower end of spindle to table, 3 inches. Length of table, 21 inches. Width of table, 13 inches. Distance center to center spindles, 6½ inches. Distance face of column to center spindle, 8 ins. Size of spindle, 1 inch. Taper hole in spindle, Morse, No. 2. Size pulley on spindles, 3¾, 4¾, 5¾ inches diameter. Face, 1½ inch. Size cone driver, 10 inches. Tight and loose on counter, 8 x 1¾ inches. Speed of counter, 220. Weight drill and counter, 650 pounds.

Including Countershaft..... $225.00

"LITTLE GIANT" GRADUATED TIRE WHEELS.

A perfectly true running wheel. Has cherry wood handle. Other parts are made of malleable iron, finely polished. A durable and convenient tool for measuring lengths of tires accurately. The pointer is held in place by friction, so that it can be set instantly, and will not get loose. The whole is made of metal, is light, accurately made, and strong. The circumference of wheel is exactly two feet, graduated by one-eighth of an inch.

Graduated.....$1.50
Plain.....1.25

"LITTLE GIANT" HORSESHOERS' BUTTERIS.

This useful tool will be highly appreciated by all horseshoers. Perfect in design, strong, durable and cheap. Handles adjustable to length. Knives replaceable. Malleable iron brace highly polished.

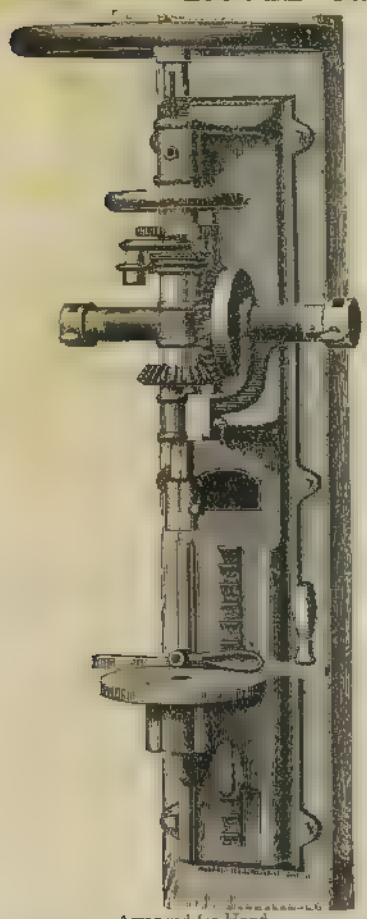
Butteris, with Ebony Handle....$1.50
" " Crutch " 1.50
Extra Knives..... .25

Making it the cheapest Butteris for repairs in the market.

Ebony Wood Handle.

Malleable Iron Handle.

"LITTLE GIANT" UPRIGHT DRILLING MACHINES.



Arranged for Hand.

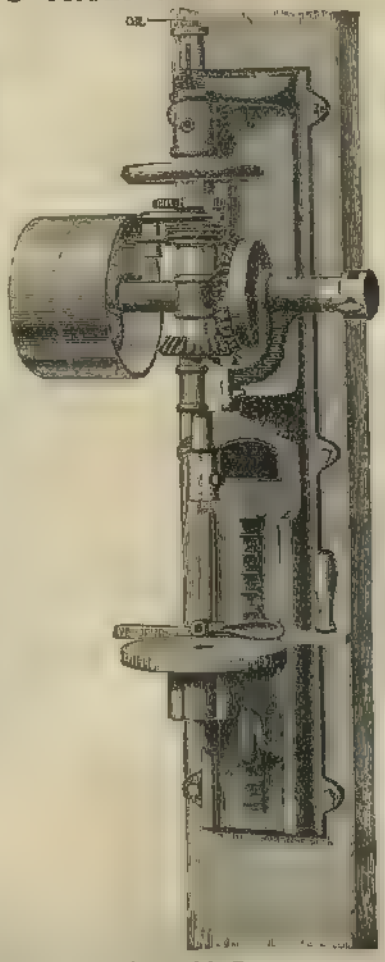
Use left hand crank for large drills. The power is multiplied 1½ times.
Use right hand crank for small drills. The speed is multiplied 1¾ times.

These illustrations give a fair idea of our New "Little Giant" Blacksmiths' Drilling Machines, as arranged for hand or power. We desire to say this, that although we have put the price of these machines low, that nothing has been neglected to make them the most perfect, compact and thoroughly well-made Drill in the market.

Weight of these machines, 150 lbs. Drills from ⅜ to 1¼ inch hole. Drills to center of 14 inch circle. Has three changes of feed. Feed equally continuous on all changes. Spindle self-lubricating by filling reservoir at top of same. Table is removable for drilling tire, and instantly adjustable to height. The frame is of iron cast in one piece, giving machine strength and stiffness. Spindle is steel, with steel set screw. Table is perfectly square with spindle. The feed has a run of 4 inches. The table has an adjustment of 16 inches. On power machines pulleys will not interfere with use of hand crank. Spindles are made to receive ½ inch or ¾ shanked drills as ordered. Unless ordered otherwise, ½ inch hole will be sent. All parts are interchangeable. Bed of machine is perfectly square with spindle.

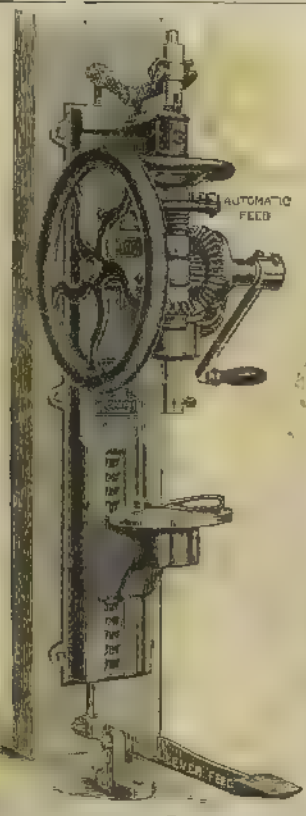
"Little Giant" arranged for

Hand, with straight table..$18.00
Power, " " " .. 21.00
Hand, " swinging " .. 20.00
Power, " " " .. 23.00



Arranged for Power.

Weight of this Machine, 150 lbs.



No. 10 G

LITTLE GIANT DRILLING MACHINES

No. 10 G.

With Automatic and Foot Lever Feed.

Drills with swinging table sent, unless otherwise ordered. Weight of machine 175 lbs. Drills to 1¼ inch diameter hole. Drills to center of 14 inch circle. Spindles furnished with ½ inch or 41-64 diameter holes. ½ inch hole sent on all orders unless otherwise ordered.

Price complete $23.00
With straight table (as shown in cut.)

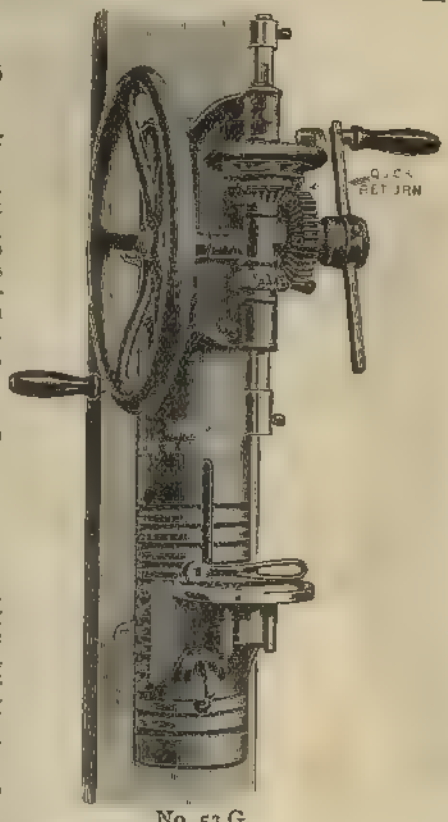
Price complete $25.00
With swinging table.

No. 53 G.

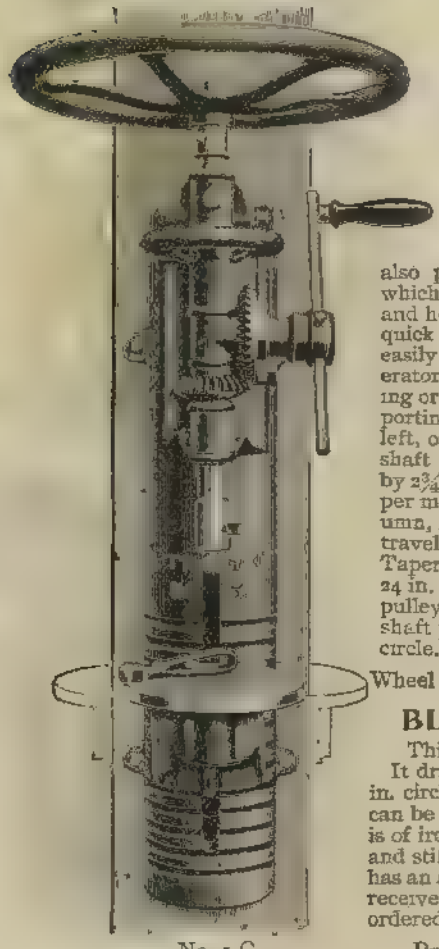
Quick Return.

Drills to 1 inch diameter hole. Drills to center of 15 inch circle. Table is removable for drilling tire, or swings to side. Adjustable to height. Feed has a run of 4 inches. Table has an adjustment of 11 inches. Spindles are furnished with ½ or 41-64 holes. ½ inch sent unless otherwise ordered

Price..... $12.00



No. 53 G.



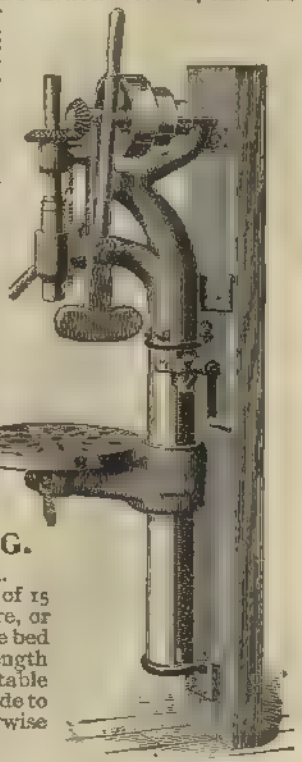
No. 5 G.

POWER POST DRILL.

No. 727.

This drill is designed for the use of carriage and wagon makers. It has cut gearing and all parts are well made and closely fitted, thus adapting it to light machine shop practice. Spindle has long feed lever for heavy work, and a short one for light work and quick return. It is counterbalanced by a weight in the hollow column, and the lever is balanced by a weight at its lower end, as shown, which serves to carry it to an upright position out of the way of the operator after use. The feed lever is also provided with our patented stop latch, which serves to disconnect it from the spindle and hold to upright position when using the quick return lever. Drill table is quickly and easily raised or lowered by one hand of the operator from his position at the drill, either standing or sitting. The table revolves in the supporting arm, and may be swung to the right or left, out from under the drill spindle. Countershaft has tight and loose pulleys, 8 in. diameter by 2¾ in. face, and should make 200 revolutions per minute. Height of drill, 60 in. Dia column, 4½ in. Dia. spindle, 1 3-16 in. Vertical travel, 6 in. Spindle bored for No. 2 Morse Taper. Greatest distance from spindle to table 24 in. Dia. large pulley on cone, 7 in. Small pulley 3 in. Cones carry 2 inch belt, counter shaft pulleys, 2½ in. Drills to center 19 in. circle. Price, com. with counter shaft, $60.00

Wheel holding attachment, extra..... 2.00



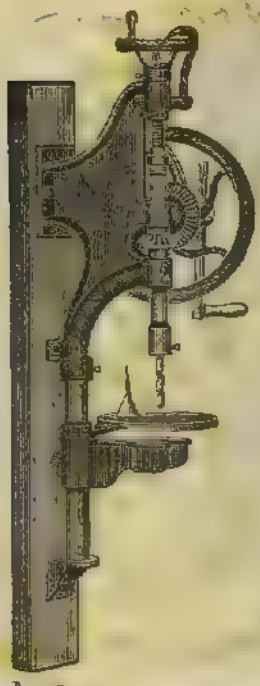
No. 727. 19 in. swing.

BLACKSMITH DRILL, No. 5 G.

This cut shows our No. 5 G Blacksmith Drill. It drills to 1 inch diameter hole and to center of 15 in. circle. The table is removable for drilling tire, or can be swung to side. Adjustable to height. The bed is of iron, cast in one piece, giving machine strength and stiffness. The feed has a run of 4 in. The table has an adjustment of 11 in. The spindles are made to receive ½ or 41-64 shanked drill. Unless otherwise ordered, ½ inch hole will be sent.

Price..... $10.00

UPRIGHT DRILLS. No. 1.



No. 1.

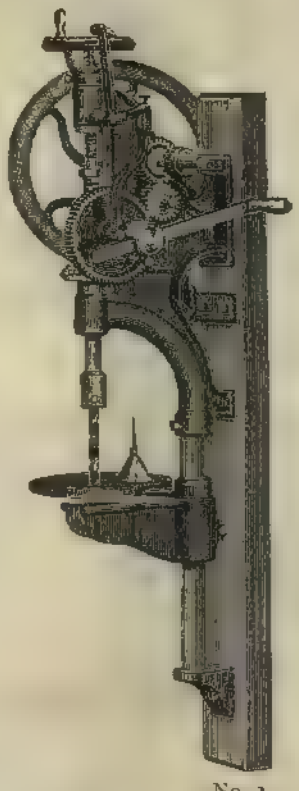
Will drill from ⅛ to 1 inch hole. Diameter of spindle, 1⅜ inches. Length, 12 inches. Will drill hole to center of 11 inch circle, 2½ inches deep. Greatest distance from spindle to table, 12 inches. The Drill Socket screws on to the spindle and takes Drills with ½ inch round shank. It can be removed and our 2 inch Universal Chuck put on in its place. The Universal Chuck would be extra. This Drill has a positive automatic feed, which can be adjusted to four rates of speed. It has swing table, 8 inches diameter, also a grinding attachment with rest for grinding the bit correctly.

Length, 47 inches; weight, 115 lbs.

Complete.....$28.00 | Without Grinder..$25.00

The grinding attachment is a solid emery wheel 6 inches diameter, ½ inch face, driven by friction from balance wheel, is brought into use by tightening of a thumb screw; it also provides an angular rest for grinding the Drill bit correctly.

No. 2.



No. 2

Will drill from ⅛ to 1¼ inch hole. This machine is designed for general blacksmith work. Diameter of spindle, 1¼ inch. Length, 22 inches. Will drill a hole to center of 11 inch circle, 2½ inches deep. Greatest distance from spindle to table, 20 inches. The Drill Socket screws on to the spindle and takes drills with ½ inch round shank. It can be removed and our 2 inch Universal Chuck put on in its place. This Drill has the automatic feed and swing table, 9 inches diameter, the grinding attachment and a wheel holder. The crank can be changed to balance wheel shaft, giving more power for heavy drilling. Crank has forward motion on both shafts. Balance wheel shaft can be disconnected by slipping intermediate gear.

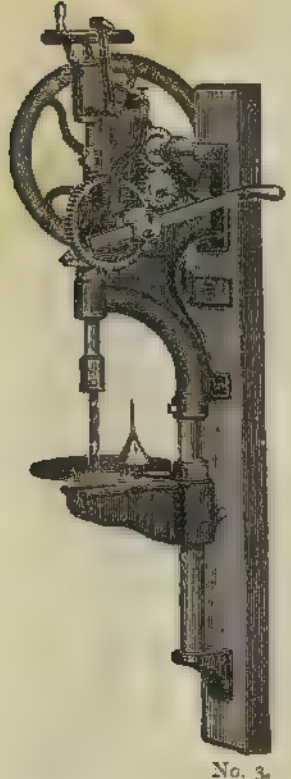
Length, 57 inches; weight, 145 lbs.

Complete.....$38.00 | Without Grinder..$35.00

The wheel holder is for drilling tires without resting on the felloe, which is desirable in case of nicely painted work, and all the holes can be drilled without lifting the wheel.

Wheel Holder, $1.50 extra.

No. 3.



No. 3.

Will drill from ⅛ to 1½ inch hole. This machine is designed for carriage makers and heavier blacksmith work. In general design it resembles the No. 2. It is built heavier and has larger capacity. Diameter of spindle, 1⅛ inch. Length, 15 inches. Will drill hole to center of 16 inch circle, 4½ inches deep. Greatest distance from spindle to table, 22 inches. The Drill Socket screws on to spindle, and takes drills with ¾ inch round shank. It can be removed, and our 2½ inch Universal Chuck put on in its place. The Universal Chuck would be extra. This Drill has the automatic feed, a swing table 11 inches diameter, the grinding attachment, and a wheel holder. The crank can be changed to balance wheel shaft, giving more power for heavy drilling. Crank has forward motion on both shafts. Balance wheel shaft can be disconnected by slipping intermediate gear.

Length, 66 inches; weight, 200 lbs.

Complete.....$48.00 | Without Grinder..$45.00

No. 4.

No. 4.

Will drill from ⅛ to 2 inch hole. This machine is designed for the heaviest of hand drilling. It is built heavy and is powerfully geared. Diameter of spindle, 1½ inches. Length, 18½ inches. Will drill a hole to center of 20 inch circle, 6 inches deep. Greatest distance from spindle to table, 25 inches. The drill Socket screws on to the spindle, and takes drills with ¾ inch round shank. It can be removed and our 2½ inch Universal Chuck put on in its place. The Universal Chuck would be extra. This Drill has the automatic feed, a swing table 15 inches diameter, the grinding attachment, and a wheel holder. The crank can be changed to either of the three shafts, and the gearing can be used or not at the option of the operator. The gearing gives six turns of crank to one of spindle. The table arm is held in position on post by a ratchet and pawl, and cannot slip.

Length, 71 inches; weight, 320 lbs.

Complete.....$93.00 | Without Grinder..$90.00

UPRIGHT DRILLS.

Nos. 5 and 6.

Nos. 5 and 6.

These machines are our Nos. 2 and 3 Drills, arranged for power. The balance wheel shaft is lengthened, and has a three-step cone pulley for 1¼ inch belt. The counter-shaft with hangers, has a three-step cone pulley, and 7 inch tight and loose pulley for 2½ inch belt.

Weight of No. 5....200 lbs.
Complete..... ... $55.00

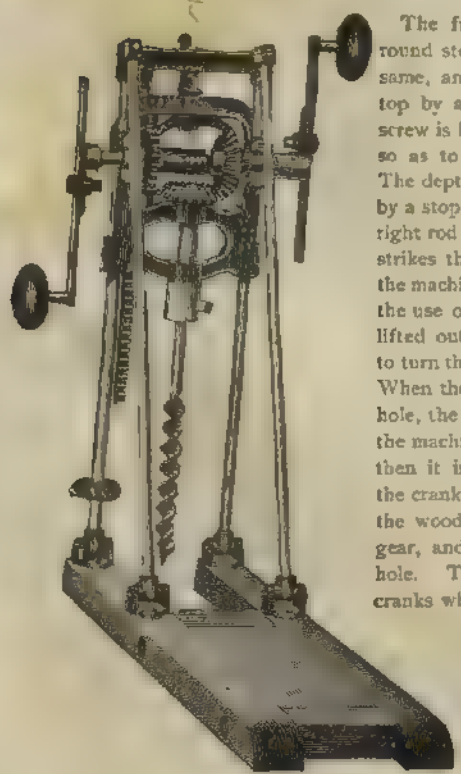
Weight of No. 6 ...255 lbs.
Complete..... ....$65.00

We also furnish Nos. 5 and 6 Drills with tight and loose pulleys, 7 inch, 2½ inch face, applied to balance wheel shaft.

No. 5, with tight and loose pulleys.....$43.00

No. 6, with tight and loose pulleys.....$53.00

BORING MACHINES.

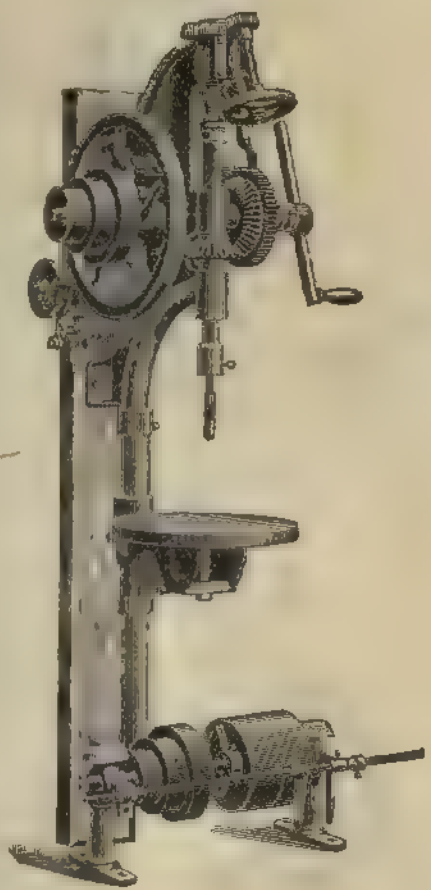


The frame is made of half-inch round steel rods; the braces are the same, and attach to the rods at the top by a set screw. When this set screw is loosened, the frame falls over so as to bore at any desired angle. The depth of hole to be bored is fixed by a stop as seen on the left-hand upright rod in the cut. When the frame strikes this stop, a latch is lifted and the machine throws itself into gear by the use of a spring, and the auger is lifted out of the hole by continuing to turn the crank in the same direction. When the auger is drawn from the hole, the frame hangs itself up until the machine is moved to the next hole; then it is dropped down by turning the crank back until the auger strikes the wood, when it is thrown out of gear, and proceeds to bore the next hole. The machine has adjustable cranks which fully regulate its speed and power. The gears are all cut, which is not common in other machines.

Machine, without Augers.....$7.50

UPRIGHT DRILLS.

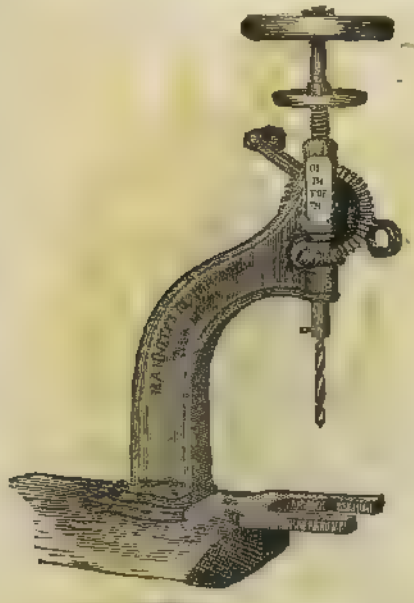
No. 7.



No. 7

This machine is our No. 4 Drill, arranged for power, and is designed to take the place and do the work of more expensive Power Drills. It has a three-step cone for 2 inch belt, which, with the back gears, gives six changes of speed. The table is clamped to arm, and can be used at the extreme edge without tipping, and the arm is held in position on post by means of a collar and ratchet, and will not slip. The countershaft, with hangers, has a three-step cone for 2 inch belt, and tight and loose pulleys 8 inches in diameter, 2½ inch face.

Weight.... ....380 lbs.
Complete.....$110.00



NEW UPRIGHT BENCH DRILLS.

No. 1.

Total height, about 24 inches; weight, 31 pounds, and capacitated to drill from the smallest up to a ¼-inch hole. Run of screw, 3½ inches; screw, wrought iron, nicely fitted into solid cast iron thread in the frame.

Each..... .... $6.00

No. 2.

Height, 28 inches; weight, 55 pounds. Drills from ⅛ to ⅜ inch hole and to center of a 9-inch circle. The feed has a run of 3½ inches; all shafts and screws are best steel. The chuck is made for a ½-inch drill shank.

Each..... ..... $8.00

No. 8.

UPRIGHT BENCH DRILLS.

No. 8.—Drills ⅜ to ¾ inch hole. Length, 33 inches; weight, 55 pounds.

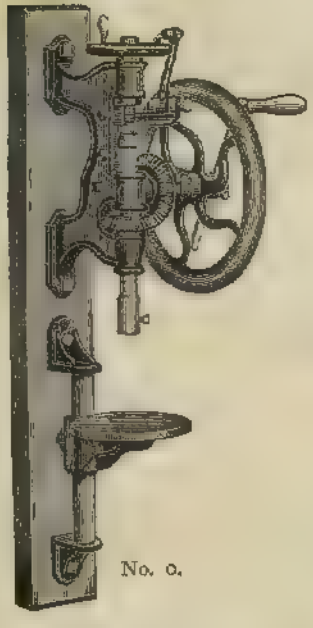
Each..... $12.00

No. 9.—Drills ⅜ to 1 inch hole. Length, 33 inches; weight, 75 pounds.

Each..... ...$15.00

Spindles of above sizes are bored to receive ½ inch straight-shank drills; have hand feed; drill holes in center of 10-inch circle. These drilling machines will be furnished, when so ordered, with a neat, strong drill chuck, fitted to spindle, holding drills from $\frac{1}{32}$ to ⅝ inch; each, $3.00. Larger size, holding drills from $\frac{1}{32}$ to ¾ inch, each, $3.50. The use of these chucks makes a great saving in price of small drills.

No. 9.



No. 0.

UPRIGHT SELF-FEEDING DRILLS.

No. 0.

This drill is fitted for a No. 2 Beach Chuck, or can be used without.

Drills from $\frac{1}{16}$ to ⅜ inch hole. Length, 26 inches. Weight, 30 pounds.

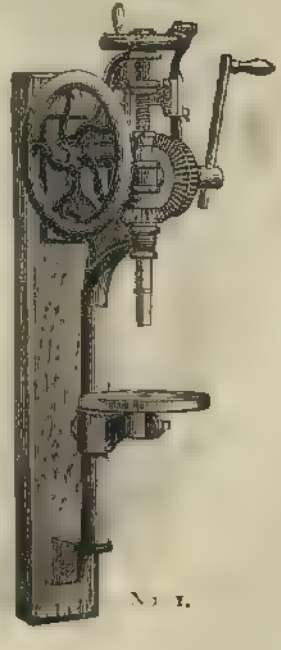
Without Chuck.....each, $20.00

No. 1.

Drills from ⅛ to ¾ inch hole. Length, 42 inches. Weight, 98 pounds.

Each,..... ...$28.00

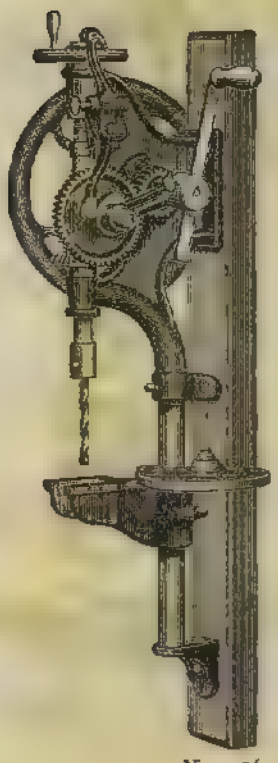
With Pulleys, for power..... 31.00



No. 1.

UPRIGHT SELF-FEEDING DRILLS.

No. 1½.



No. 1½.

This machine has nearly a continuous feed, which may be quickly adjusted by a thumb-screw to three rates of speed. A fast or slow motion may be given the drill by changing the handle from shaft *A* to shaft *B*. By this arrangement the capacity of the drill has been increased nearly a third. Will drill to the center of a 10-inch circle. Length, 44 inches. Weight, 120 pounds.

Each..... $34 00
Arranged for power, with pulleys..... 37.00

Arranged for power, with one pulley in place of balance wheel, without extra charge.

One pulley, with balance wheel....extra, $1.50

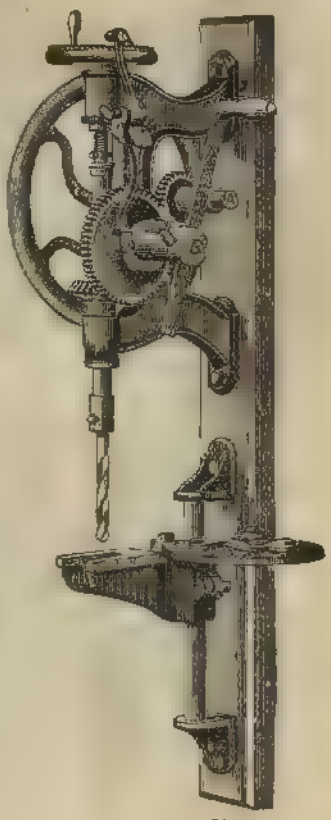
No. 2.

No. 2 is similar to No. 1½, and has all the late improvements. The swing table will be found useful in many ways, and much more convenient than driving them in and out with a hammer. It is out of the way when not in use, and may be quickly swung into position when wanted. Will drill to the center of a 15-inch circle. Drills from ⅛ to 1¼ inch hole. Length, 54 inches. Weight, 160 pounds.

Each..... .... $48.00
Arranged for power, with pulleys 52.00

Arranged for power, with one pulley in place of balance wheel, without extra charge.

One pulley, with balance wheel....extra, $1.50

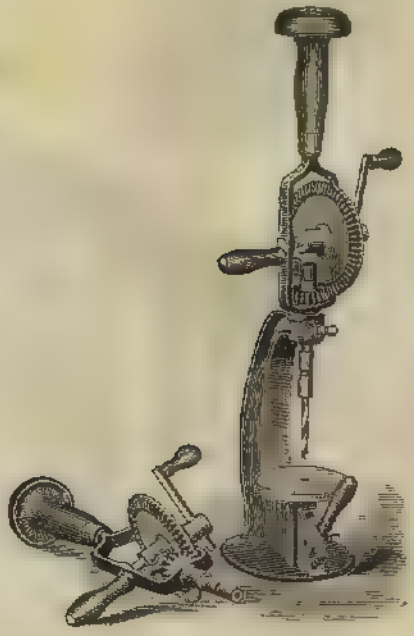


No. 2.

No. 3.

Drills ¼ to 1½ inch holes in center of a 19-inch circle. Weight, 250 pounds.

Without Pulleys..... .. ..each, $75.00 | With Pulleys.....each, $79.00



COMBINED BREAST AND UPRIGHT DRILLS.

This cut represents the breast drill in one position, and in the other an upright lever drill, making a light, useful tool suitable for a variety of small work. When the stand is fastened to a bench, the table can be raised by foot-power, giving operator one hand to manage his work while the crank is being revolved by the other. Spindle is of steel; has hole for ¼-inch shank drills; end of spindle is tapered to fit small chucks for wire drills. Length from base to top of handle, 25½ inches.

Breast Drill, without Stand.....each, $4.00
Stand, with Rise-and-Fall Table..... " 4.00

No. 1½ UPRIGHT DRILLS.

Double Geared.

Will drill from ⅛ to 1½ inch hole. This Drill is heavier and of larger capacity than No. 1. Diameter of spindle, 1⅛ inches. Length of spindle, 12 inches. Greatest distance from spindle to table, 12 inches. The Drill Socket screws on the spindle and takes drills with ½ inch round shank. It can be removed and our 2 inch Universal Chuck put on in its place. The Universal Chuck would be extra. It has a positive automatic feed, which can be adjusted to four rates of speed. It has swing table, 8 inches diameter, also a grinding attachment with rest for grinding the bit correctly.

Total length, 47 inches; weight, 120 lbs.

With grinder	$35.00
Without grinder	32 00
With tight and loose pulley and grinder	40.00
" " " without "	37.00
" counter-shaft and grinder	52.00
" " without grinder	49.00

Delivered free on board.

All goods shipped complete unless otherwise ordered.

No 1½ Upright Drill.

No. 8 POWER DRILLS.

Lever Feed.

Diameter of spindle, 1⅞ inch. Length of spindle, 28 inches. Will drill hole to center of 16 inch circle 5¼ inches deep. Greatest distance from spindle to table, 23 inches. Vertical movement of table 17¾ inches. The Drill Socket screws on the spindle and takes drills with ¾ inch round shank. It can be removed, and our 2½ inch Universal Chuck put on in its place. The Universal Chuck would be extra. This Drill has lever feed, which can be adjusted to any position of the Drill. The counter-shaft, with hangers, has a three-step cone pulley, and a 7 inch tight and loose pulley, for 2½ belt.

Weight	200 lbs.
Price	$70.00

No. 8 Power Drill.

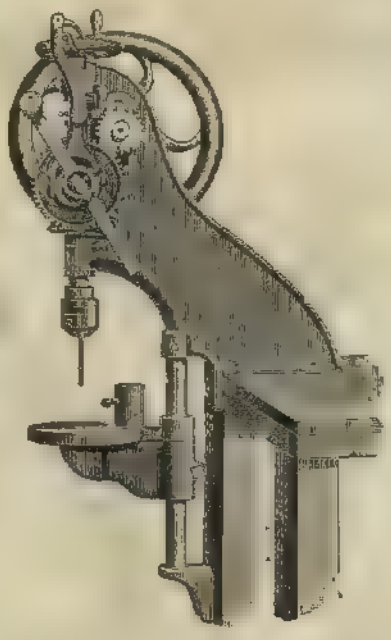
BENCH DRILLS.

Diameter of spindle, 1⅜ inch. Length, 10 inches.

Will drill a ¾ inch hole to the center of a 10 inch circle, 2 inches deep.

Drill Socket takes ½ inch round shank.

Diameter of table	7 inches.
Total length	38 "
Weight	90 lbs.
Price	$20.00



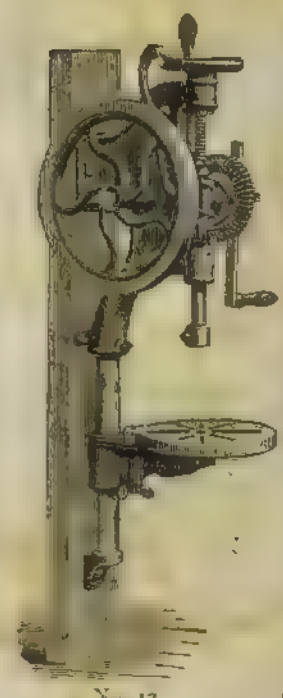
DRILLING POSTS.

For use with Ratchet Drills.

This is a very handy and useful article to use in connection with Ratchet Drills, and will meet the wants of every machine shop and worker in iron. It is made of wrought iron, the post is turned for the swinging arm, and the foot is planed square, and has a slot in its full length for bolting down.

	No 1.	No. 2.
Height of Posts	30 in.	26 in.
Radius of Arms	10 "	12 "
Each	$8.00	$10.00

No. 12 ADVANCE DRILL.



No. 12

This Drill has very long, heavy bearings, which are well babbitted and cannot spring or get out of line. The Automatic Feeding Device is of the very latest improved mechanical construction, and is entirely out of the way of the operator, being located behind the spindle, and worked by a cam on inside of main gear wheel. This cam is so constructed as to give nearly a constant feed, and does not jam the drill into its work all at once, thus avoiding breaking of bits. It also has two speeds which can be obtained instantly by changing handle from one shaft to the other.

Sizes and Dimensions.

Size of spindle, 1 inch; run of spindle, 3 inches; size of column, 5 9-16 inches; greatest distance of spindle to table, 14¼ inches, spindle turns 1½ times to one turn of crank on fast speed; crank turns 11 times to one turn of spindle on slow speed; drills to center of 15 inch circle and up to 1¼ inch holes; spindle bored for ½ inch shank drills, unless otherwise ordered. Weight, 125 lbs.

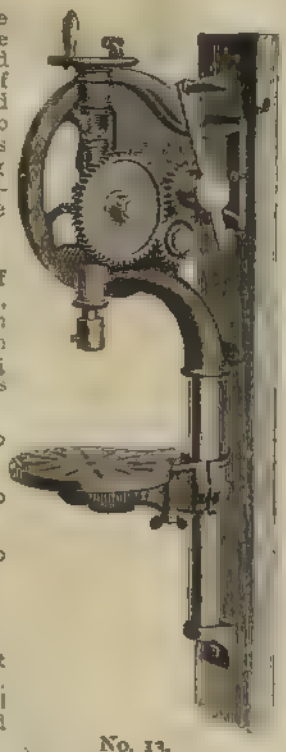
Price..... $10.00

Tight and loose pulleys for power instead of fly wheel, extra..... 3.00

Chucks to take square shank or bit stock drills, extra..... 1.00

No. 13 ADVANCE DRILL.

This Drill is similar in construction to the No. 12, except it is double backed geared, as shown in the illustration. The crank can be changed from main gear to fly wheel shaft, as shown, in an instant, for drilling large holes, and when thus used the crank turns in the proper direction.



No. 13.

Sizes and Dimensions.

Size of spindle, 1¼ inches; run of spindle, 3 inches; size of column, 2 inches; greatest distance of spindle to table, 16½ inches; spindle turns 1½ times to one turn of crank on fast speed, crank turns 11 times to one turn of spindle on slow speed; drills to center of 18 inch circle and up to 1¼ inch holes; spindle bored for ½ inch shank drills unless otherwise ordered. Weight, 175 lbs.

Price..... $16.00

Tight and loose pulleys for power instead of fly wheel, extra..... 3.00

Chucks for holding square shanks or bit stock drills, extra..... 1.00

No. 14 ADVANCE DRILL.

The No. 14 Advance is similar in all respects to the No. 13, but much larger and heavier.

Sizes and Dimensions

Size of spindle, 1⅛ inches; run of spindle, 3 inches; size of column, 2¼ inches; greatest distance of spindle to table, 18½ inches; spindle turns 1½ times to one turn of crank on fast speed; crank turns 11 times to one turn of spindle on slow speed; drills to center of 22 inch circle and up to 1½ inch holes; spindle bored for ½ inch shank drills unless otherwise ordered. Weight, 240 lbs.

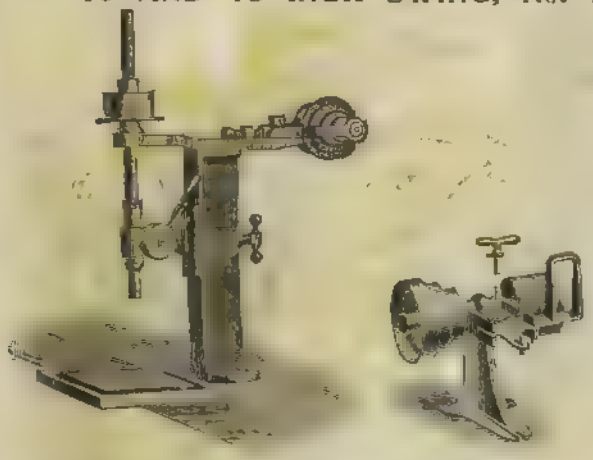
Price..... $25.00

Tight and loose pulleys for power instead of fly wheel, extra..... 3.00

Chuck to take square shank or bit stock drills, extra..... 1.00

Never buy any Tools or Supplies until you have a written estimate from Montgomery & Co. They are always the cheapest, quality considered.

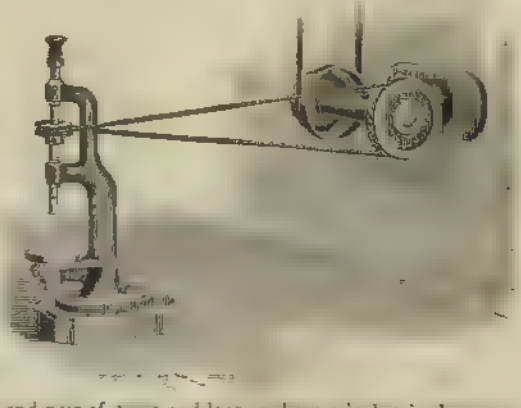
10 AND 13 INCH SWING, No. 1, SENSITIVE BENCH DRILLS.



This cut illustrates a style of drill made for use on the bench. The post, top and drill head is that of either the 13 or 10 inch swing drill, mounted on a substantial table which is provided with groove for oil drip. This table is designed to bolt to the bench as shown in the cut. With this drill is furnished an endless belt to drive the spindle, and a special countershaft, with cone pulley. The tight and loose pulleys on counter are 5 inches diameter, 2¼ in. face, and for ordinary work should run 350 turns per minute, giving with the three speeds on cone speed of 215, 340, or 378 turns per minute on spindle. The countershaft is interchangeable, end for end; a ⅞ round rod is used to connect shipper. The loose pulley and box of counter are self-oiling. Size of table, 10 inch swing drill, 9½ x 11; table, 13 inch swing drill, 11 x 11 inches.

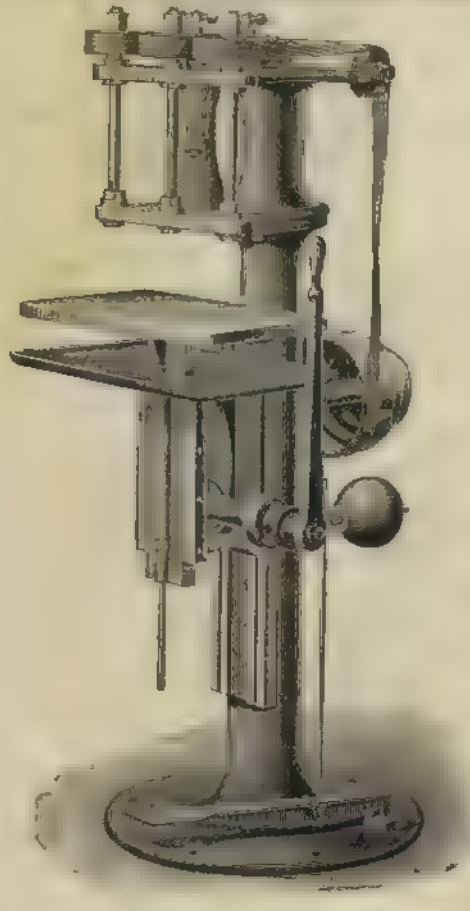
13 inch swing Bench Drill and Counter, $60.00
10 " " " " " " 54.00

No. 00 DRILLS.



This Drill is adapted to very light work. Drills No. 40 and smaller can be used. It can be set on bench, and run from a wall, corner, as shown, or of a number are required, a shaft with a number of driving pulleys can be used. By setting the top of driving pulley on the counter slightly higher than the center of the driven pulley on spindle the tension of the belt will draw the spindle and keep it at the point of its highest throw, and at the same time will in no way interfere with the down feed. The spindle is 4 Stubs' steel. It runs in brass bushings, which can easily be renewed by reason of wear. The button runs loose on shank and fits to top end of spindle; the lower end has taper hole for chuck shank. Table, 3 inches in diameter, swing to center, 4½ inches. Pulley on spindle, 1½ inches diameter, grooved for ¼ round belt. Wall counter has 4 inch diameter grooved pulley, and three step cone. An overhead counter with corresponding cone and pair of tight and loose pulleys 4 inches in diameter, 1¼ face each, for ordinary work should run 200 revolutions per minute, this giving a range of spindle speed from 1100 turns for slow to 1800 turns for fast speed.

Drill	$12.00	Overhead Counter	$6.00
Wall Counter	4.00	Complete	22.00



ENDLESS BELT
THREE SPINDLE DRILLS.

This tool is one that overcomes the most serious forms of annoyance that are common to all multiple or gang drills in general use. As will be seen, the feed is by foot or hand, the work being brought up against the drills. The arrangement of the table is similar to that used in drills of this class, is adjustable vertically on column, counterbalanced by weight, has stop for depth gauge, and adjustable rod to aid in lowering and raising the arm that table slide runs in. The method of driving spindles is new. There is as utilized on the Sensitive Drills, an endless belt. The belt used in the machine is 18 feet long, and is in contact with from one-half to two-thirds of the circumference of spindle pulleys. The spindle in lower bearing is 1½ inches in diameter. It runs in a gun-metal box with [illegible] for take up. It will drill holes from ¼ inch to [illegible]. We claim superiority for this drill in the following points: [illegible] endless belt [illegible] driving pulleys; [illegible] pulleys [illegible], no driving gears or [illegible] smooth running, steadiness of frame, no lateral strain on spindles; [illegible] boxes.

Also, favorable comparison with any make as to size of table; size of spindle swing of drill; amount of vertical adjustment to table; handy adjustment of hand and foot lever; economy of belts; variation of speed; general handiness of design; price considered with reference to capacity.

Greatest distance from lower end of spindle to table, 19 inches. Shortest distance from lower end of spindle to table, 3 inches. Length of table, 21 inches. Width of table, 13 inches. Distance center to center spindles, 6½ inches. Distance face of column to center spindle, 8 ins. Size of spindle, 1 inch. Taper hole in spindle, Morse, No. 2. Size pulley on spindles, 3¾, 4¾, 5¾ inches diameter. Face, 1½ inch. Size cone driver, 10 inches. Tight and loose on counter, 8 x 1¾ inches. Speed of counter, 220. Weight drill and counter, 650 pounds.

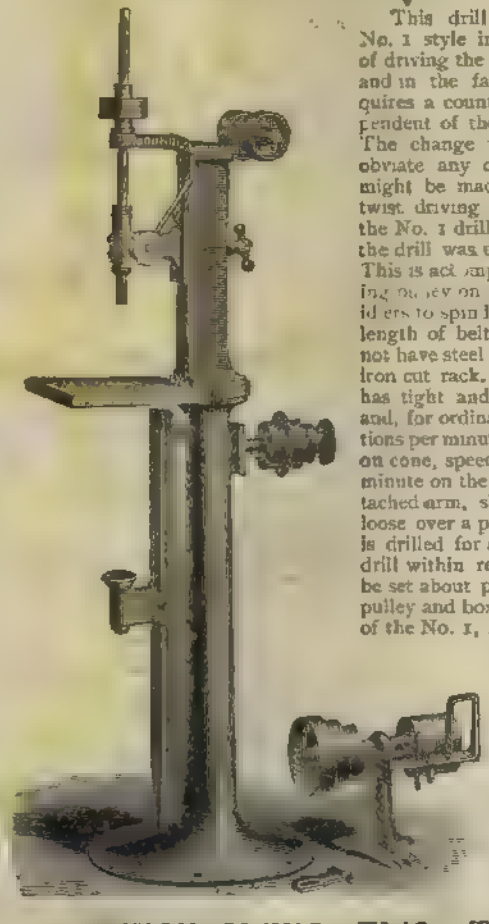
Including Countershaft.....$225.00

10-INCH SWING, No. 1, SENSITIVE DRILLS.

This machine is adapted to drilling ¼ inch and under. For this range of work it is far better than a heavier tool. With the exception of the steel rack in spindle sleeve it possesses many of the good points of the 13 inch drill. The spindle is ¾ inch diameter, 23½ inches long, made from tool steel, with No. 1 Morse taper-hole for chuck shank. The distance from the face of drill-head to centre of spindle is 5 inches. The spindle is adjustable to a height of 12 inches from top of table to bottom of spindle. The feed-lever will give three or feed of three inches. The tight and loose pulleys on lower cone are 4½ by 1⅜ inch face, and for ordinary work a speed of 400 revolutions is recommended, which gives, with the three changes of feed on the cone pulley, a speed of 1200, 647, and 371 on spindle pulley.

Each..... $70.00

10 AND 13-INCH SWING, No. 2, SENSITIVE DRILLS.



This drill differs from No. 1 style in the manner of driving the spindle pulley and in the fact that it requires a countershaft independent of the drill frame. The change was made to obviate any objection that might be made to quarter-twist driving belt used on the No. 1 drill, and to give more power where the drill was used up to its extreme capacity. This is accomplished by belting from the driving pulley on the back cone up over one of two idlers to spindle pulley. This insures a good length of belt. This 10-inch swing style does not have steel rack in spindle sleeve, but a cast iron cut rack. The countershaft, illustrated, has tight and loose pulleys, 5 by 2½ inches, and, for ordinary work, should run 350 revolutions per minute, giving, with the three changes on cone, speed of 1130, 630 and 378 turns per minute on the spindle. The slotted end of detached arm, shown on cut of countershaft, fits loose over a pin on the shipper; the other end is drilled for a ⅛ round rod, by which connection is made to shipping handle on drill within reach of the operator. In consequence of above, these two points should be set about perpendicular. The counter is interchangeable, end for end. The loose pulley and boxes are self oiling. As to capacity and sizes we refer to the description of the No. 1, 13 inch swing, and the No. 1, 10-inch swing drills.

13-inch swing and counter..... $90.00
10 " " 80.00

19-INCH SWING DRILLS, ADJUSTABLE TABLE.

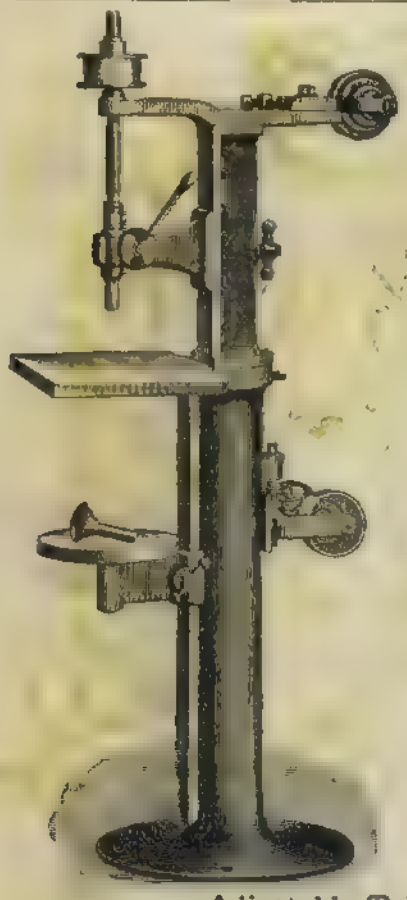
We can furnish a line of two, three, and four-spindle drills that will drill to the centre of 19 inches. They are the same as the regular 13 inch swing style, with the exception of swing

Two spindle, 19 inch swing $145 00
Three spindle, 19 inch swing 170.00
Four spindle, 19 inch swing..... 240.00

10-INCH SWING, TWO, THREE, AND FOUR DRILL SPINDLES.

The swing is to the centre of 10 inches. Distance from centre to centre of spindles 5 inches; distance from top of table to bottom of spindle, at greatest elevation, 12 inches. Spindles are of tool steel, 23½ inches long, ¾ inch diameter. The spindles are all driven by the endless belt tightening pulleys being provided as described, on the 10 inch swing drills of same number of spindles. The following pulleys are provided respectively to three spindles, unless otherwise ordered. On the two spindle, 4 and 4½ inches diameter, 3 inch face; on the three spindle 4 inch, 4¼ and 4½ inches diameter, 2½-inch face; on the four spindle, 3¼, 4, 4¾ and 5½ inches diameter, and 1¾ inch face. These are driven from a driving pulley on the cone on back stud, 10 inches diameter. The spindle pulleys can be interchanged on the cones, as the idlers run in adjustable yoke bearings so that the proper lead of belt from the idler to the spindle pulley can be secured. For special work the pulleys from 2½ to 5½ inch diameter can be used. On the cone three changes of speed are provided for. A countershaft, with corresponding cone is furnished and the tight and loose pulleys on same are 5 inches diameter, 2½ inch face, and for ordinary work, these should run from 250 to 300 turns per minute. The capacity of these drills is for holes ½ inch diameter and less. With each drill is furnished an endless belt to drive same, depth stops, drift key and chain. The tables have a groove around same. Size of tables, inside of groove as follows: two spindle, 11 x 10 in., three spindle, 11 x 22 in.; four-spindle 11 x 30 in. This line of drills does not have the steel racks in the spindle sleeves, otherwise they are, with the exception of swing and design of drill head, the same in nearly every particular as the 13 inch swing drills, and the same handy adjustments and improvements appear.

Two spindle drill, 10 inch swing, including counter..... $108.00
Three " 10 " " 145.00
Four " 10 " " 180.00



13 INCH SWING, No. 1, SENSITIVE DRILLS.

A steel rack ⅜-inch face is inserted in the spindle sleeve; this meshes into a steel pinion which with its bearings is cut from the solid. The rack was formerly cut in the cast-iron sleeve and while suitable for light work, was not adapted to the drilling of ⅜ and ½-inch holes.

To compensate for the extra weight of the spindle the spring box is made correspondingly larger, and a spring 5 feet long, ⅝ inch wide, and .022 thick is used, and furnishes a perfect counterbalance for the spindle. More or less tension can be obtained by loosening a single screw on the part of the spring box attached to the drill-head, and by holding stationary the part of the box into which the hand-lever enters and turning the inside section, tension can be regulated to suit. The center of spindle is 6½ inches from face of post. On the upper table, work 13 inches, and on lower table 11 inches diameter, can be drilled to center. Extreme height from bottom of spindle to top of upper table is 12 inches; to top of lower table at its lowest part, 44 inches. Holes up to ¾ inch diameter can be drilled.

On the following point, which is common to our entire line of drills and found on those of no other make, we claim superiority:

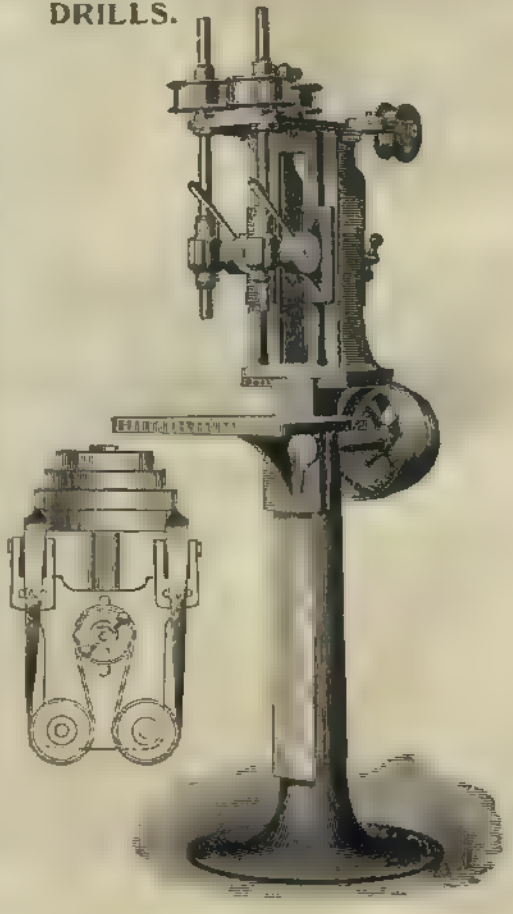
The spindle is driven by an endless belt, 56 inches long, 1¼ inch wide. The advantages of this means of driving are apparent: 1st.—The spindle has a smooth and steady movement, without the vibration usually caused by the rapid passage of the extra thickness of belt and lacing over pulley as ordinarily used. 2d.—The stretch of belt from wear and from changeable weather can be taken up instantly. 3d.—With no trouble from lacings, there is no excuse for drill not working to capacity at all times.

The yoke that carries the lower shaft on which the tight and loose pulleys and cone are placed, is tongued to a boss on the column casting and held by a screw passing through an elongated slot. This slot provides a perpendicular adjustment of 1½ inches for yoke, and consequent tightening of belt between the two cones when necessary.

The tight and loose pulleys are 4 x 1⅜ inches face, and for ordinary work a speed of 400 revolutions a minute is recommended, which gives, with the three changes of speed on cone, speed of 1,200, 647, 371 on spindle pulley.

Each.....$80.00

13 INCH SWING, TWO SPINDLE SENSITIVE DRILLS.



Adjustable Table.

Of the line of Multiple Spindle Drills none are in greater general demand than this tool. The following most desirable feature is peculiar to, and found in this drill only.

The two spindles are driven by a single endless belt, 1½ inches wide. The belt passes from the 10-inch diameter driving pulley, on the back stud, up over an idle pulley, which runs in an adjustable yoke frame. This yoke is adjustable, so that pulleys of different diameters can be used on the spindles, and the proper length of belt over the idler secured. From the idler the belt passes around the right-hand driving pulley, thence around a tightening pulley, which runs on an adjustable stud, and continues around the left-hand spindle pulley and idler back to the starting point. The desired belt tension can be secured in a moment by the movement of tightener. The belt contact is fully 60 per cent. of the circumference of driving pulleys. The length of driving belt, which we furnish with the drill, is 10 feet 11 inches. It is a strong, extremely smooth-driving drill.

The spindle driving pulleys are 4 and 4¾ inches respectively in diameter. Pulleys from 2½ to 6 inches diameter fitted if desired. Three changes of feed are provided by the cone on the back stud. Distance from face of post or front of the slide to center of spindle, 6½ inches. Distance from center to center of spindles, 6 inches. Least distance from bottom of spindle to top of table, 4½ inches; greatest distance between same points, 40 inches. Size of table, 18½ x 13. Throw of spindle by hand lever, 3 inches. Will drill from 0 to ½-inch holes.

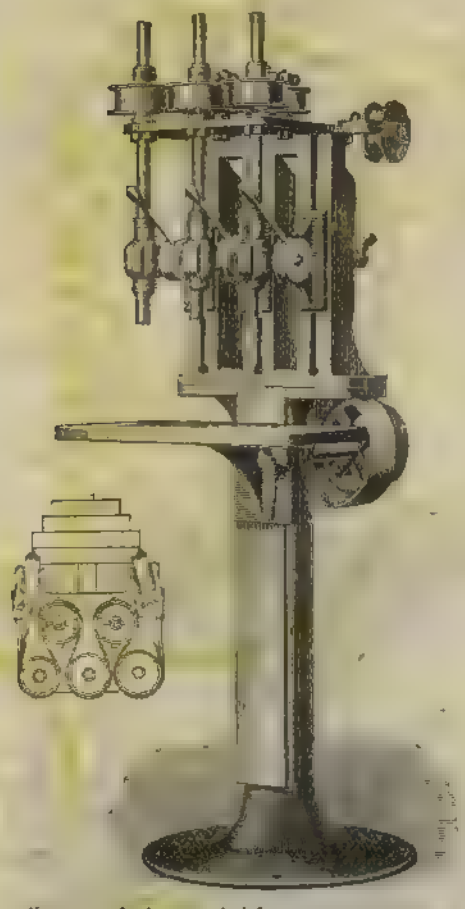
The spindle sleeves are provided with an inserted steel rack, ⅝ inch face. The pinion which meshes into this is steel, and, with its bearings, is cut from the solid. A larger and more substantial spring and spring box are provided. The adjustable table is a new feature that adds greatly to the capacity of tool. We, however, retain the independent adjustment of the heads and spindles. In jig drilling bushings will often vary from 2 to 8 inches in height. If, as on other similar makes of drills, no provision is made for varying height of heads, special chuck-shanks and extensions must take the place of the adjustment we provide.

We furnish with the drill two depth-stops for spindles, an endless belt, a drift key with chain for same, and a countershaft. The tight and loose pulleys on counter are 8 x 2¼ inch face, and for ordinary work should run 250 turns per minute.

Each.....$120.00

13 INCH SWING, THREE SPINDLE DRILLS.

Adjustable Table.



This tool in common with the one and two spindle drills, is adapted to all kinds of light drilling, countersinking and reaming up to ½ inch.

This is the most important part of the tool, and is made to meet the requirements of capabilities for high speeds, smooth running, absence of vibration, to provide a driving power, which, with a light tension, shall firmly and positively drive the spindle under varying conditions, and at the same time provide a feed that is so delicate and sensitive that the operator may crowd the drill at all times to its greatest capacity without fear of breakage. The spindles in the full line of 13 inch swing drills are alike, made of tool steel, 24 inches long, ¾ inch diameter, in the sleeve bearings. The lower end is fitted with a Morse No. 1 taper hole and ample key way. The sleeve bearing is 4⅜ inches long. The driving pulley runs on a stud attached to top frame, and drives the spindle by a bushing and feather in upper part of hub.

The driving belt, as shown in the diagram, passes from the 10 inch driver, on the back cone, around spindle pulleys and tightening pulleys. The belt is 1¾ inches wide and 13 feet long. This we furnish with the drill. This one belt takes the place of three or more short-laced ones, as usually found on tools of similar capacity. The saving in time and annoyance from loose belts, and consequent loss of output, and frequent breakage of drills, caused by slowing down of speed, will return to the user a good per centage on its cost each year.

The distance from face of post, or of slide, to the center of spindle, is 6½ inches; from center to center of spindles, 6 inches. Shortest distance from table to bottom of spindle, 4½ inches; greatest distance, 40 inches. Size of table, 13 x 24. Spindles have independent adjustment as to height.

The driving pulleys on the spindles, as regularly furnished, are 4, 4¾ and 5½ inches in diameter. The idler pulleys are set in adjustable yokes to allow proper lead of belt from them to any diameter pulley on spindle. There are three changes of feed provided on the back cone. On the countershaft are 8 x 2¾-inch face tight and loose pulleys. These, for ordinary work, should run from 250 to 300 turns per minute. Will drill ½-inch hole and under. Depth stops, belt, key drift, etc., furnished.

Each.....$160.00

FOUR SPINDLE SENSITIVE DRILLS.

This tool has the same capacity (including swing), distance between spindles, etc., as the two and three spindle drills, also the steel rack and all late improvements mentioned as added to them. We furnish with it countershaft. The tight and loose pulleys are 8 x 2¾, and should, for ordinary work, be speeded from 250 to 300 turns per minute; also an endless belt 10 feet, 9 inches long, 1½ inches wide, to drive the spindles, and a key drift and chain. The table of drills is 13 x 30 inches.

With Countershaft.....$200.00

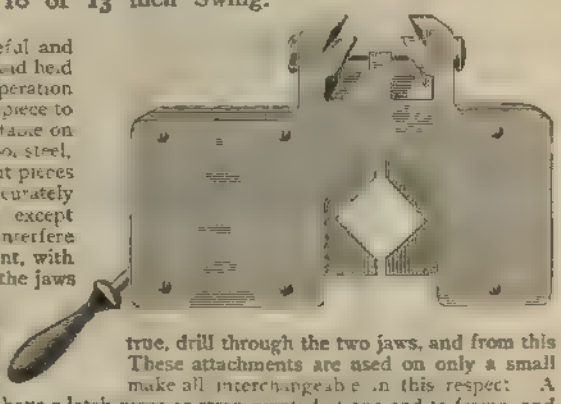
FOOT ATTACHMENTS.

For special work it is sometimes desirable that the operator shall have both hands free, and in such cases an attachment which can be placed on either Nos. 1 or 2 Drill is furnished, consisting of foot-lever and adjustable connection with spindle-lever. Drill can be operated either by hand or foot-power feed. Photograph on application.

Attachment for Nos. 1 or 2 Drill, extra.....$8.00

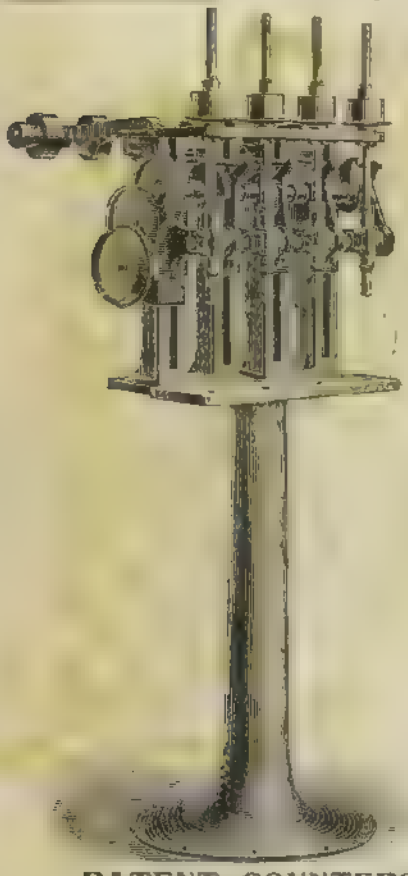
CENTERING ATTACHMENTS.

For Nos. 1 or 2 Drills, 10 or 13 inch Swing.



The Centering Attachment, cut of which is shown, is a useful and labor-saving device. It is applied to the side on the column, and held in position at any height desired by ways and a clamp-bolt. In operation the drill table is swung around to one side, the lower end of the piece to be centered is placed in the cup or socket in each which is secured adjustable on the slide. The jaws of the Centering Attachment are made of tool steel, are substantially geared and worked by lever and pinion. Work of pieces either round or square, from 0 to 1¾ inch, can be quickly and accurately centered. The attachment can remain on the slide at all times except when it is desired to do work on the lower table that would interfere with it. When the attachment is ordered with a drill, it is sent, with the jaws fitted, without extra charge. When ordered separate, the jaws are sent full size and after attaching it to the slide of the drill it is to be used on the jaws should be closed by each other to their greatest throw and clamped. Then with a fine cut, spring nuts lay out the 45-degree angles, and drill and file to lines. These attachments are used on only a small percentage of the drills made, and it would not be practical to make all interchangeable in this respect. A handy little device, which may be added to this attachment, is to have a latch-piece or strap pivoted to one end to frame and passing across the center line. In this put a hole that will receive a line of bushings to cover the drill sizes used for center work. The right bushing can be slipped in, and the work center drilled without prick punching or using the time and care necessary to start drill if not prick-punched.

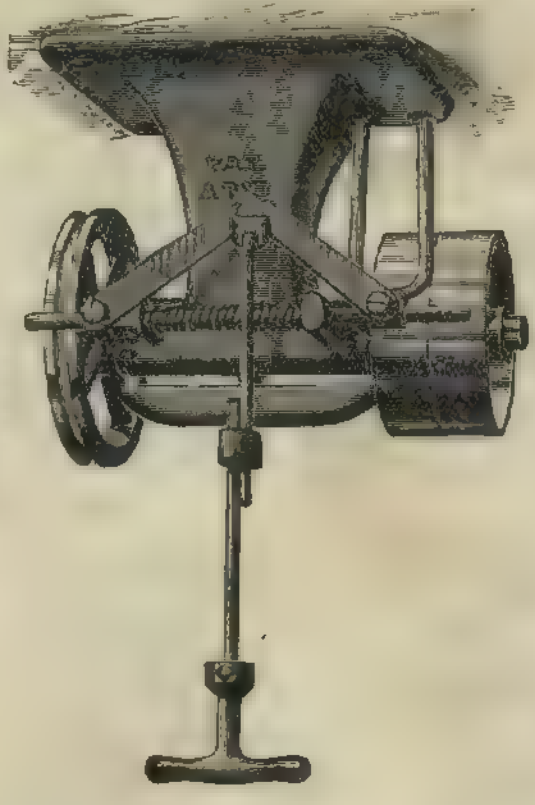
Each.....$15.00



FOUR SPINDLE
AUTOMATIC CAM FEED DRILLS.

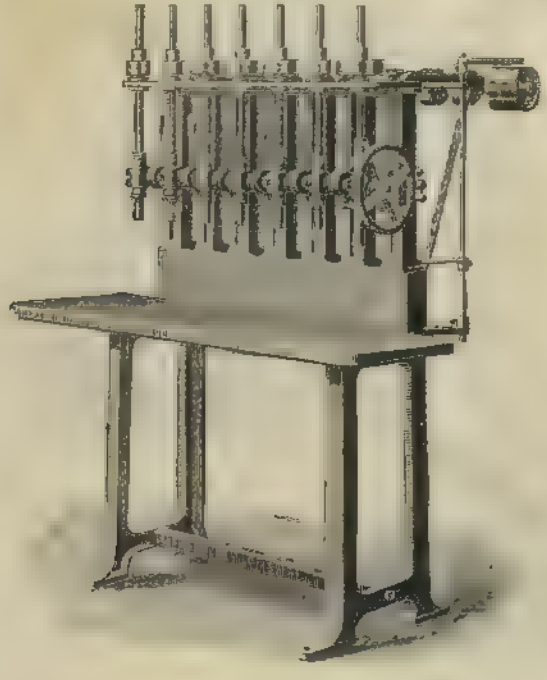
The spindles are driven with a quarter-twist belt from shaft supported by top frame. On this shaft are tight and loose pulleys, and a feed pulley, which drives the gears for the shaft, on which are [illegible] cams set operating. These cams, working against pins on the feed levers, feed the spindles down, and at completion of throw springs attached to the same levers raise the drills. A suitable work-holder or jig should be provided. This we will make as an extra, if desired. The feed and time of cam motion should be adapted to do the work intended to the best advantage. From 2 to 12 spindles can be set up on suitable frame, the profitable limit being all that an operator can get work out of and into. On one of the four spindle style recently made, 24 holes per minute are drilled and countersunk, each spindle drilling six per minute, and giving the operator two and one-half seconds to get piece out and in. We would suggest that parties send sample of work they desire to do, with order or inquiry.

With Counter.....$250.00



PATENT COUNTERSHAFTS.

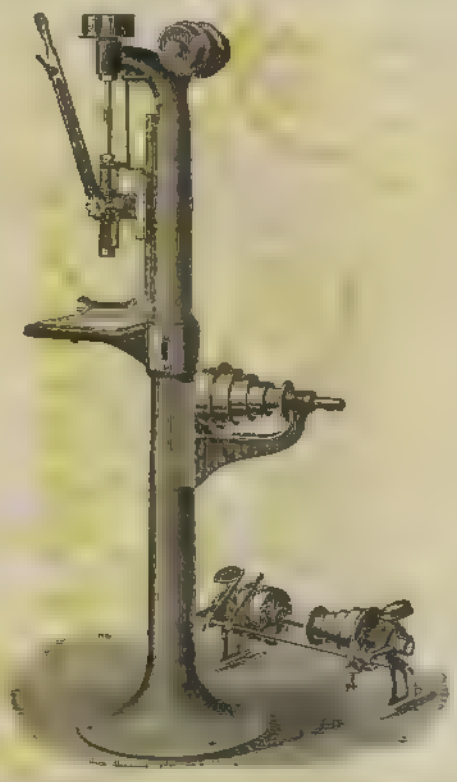
This is one of the most convenient Countershafts for light machinery now upon the market. The belt is held in position upon the tight pulley by two knuckle joint arms attached to the adjustable shifting rod. When the belt is on the loose pulley the arms are held in a firm position by a steel spring acting upon the shipper shaft. The shifting rod which [illegible] obstacle, may be lengthened or shortened at the will of the operator. To start the Countershaft pull down on the shifting rod. Hanger 7 inch drop. Each.....$9.00



SPECIAL SEVEN SPINDLE DRILLS.

The cut of seven spindle drill represents a tool made for one of the large typewriter manufacturing companies. A pair of side frames, once placed in the drill jig, had some eighty operations performed under the spindles. The number of spindles corresponded to the number of different sized drills and counterbores required to complete the work in this line. This drill has a clearance of 18 inches from bottom of spindle to top of table. Prices on other sizes quoted on application.

With Countershaft.....$350.00



SENSITIVE BELT DRILLS.

It has counterbalanced spindle, sliding head, and lever feed. This machine is capable of drilling holes ½ of an inch in diameter. Countershaft accompanies machine.

Greatest distance from spindle to table, 25 inches. Vertical traverse of head on column, 12 inches. Vertical adjustment of table on column, 12 inches. Table is 13 inches long by 10 inches wide. Vertical traverse of spindle, 4½ inches. Diameter of spindle, 1 3/32 inches. Hole in spindle fits Morse taper No. 2. Distance from post to centre of spindle, 5¼ inches. Width of driving belt, 1¾ inches. Width of belt on cones, 1¾ inches. Counter pulleys, 6-inch diameter by 2-inch face. Speed of countershaft, 250 revolutions per minute. Floor space required, 27 inches by 20 inches. Extreme height, 6 ft. Weight, 370 lbs.

Each $85.00

12-INCH SWING BENCH DRILLS.

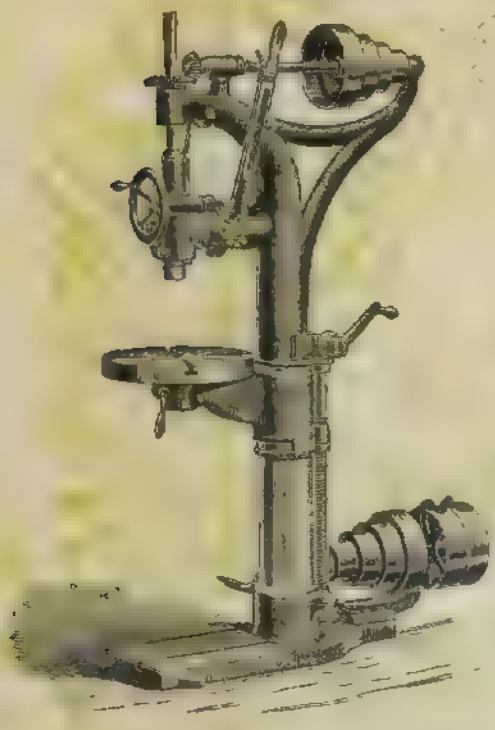
This machine is designed for light work. It is accurately made in every respect and similar in detail to larger sizes. It has counterbalanced spindle, lever feed, and quick return movement. Countershaft accompanies machine.

Distance from post to centre of table, 6½ inches. Greatest distance from spindle to table, 12 inches. Vertical traverse of spindle, 6½ inches. Hole in spindle fits Morse taper No. 2. Width of belt on cones, 1½ inches. Diameter of driving pulleys on countershaft 6 inches; face of driving pulleys, 2 inches. Speed of countershaft, 250 revolutions per minute. Bench space required, 24 inches by 12 inches. Total height to top of cone, 3 feet 6 inches. Weight complete with countershaft, 225 lbs.

Each..... $68.00

20-INCH SWING DRILLS.

Combined Wheel and Lever Feed. Stationary Head.



This machine has both wheel and lever feed. The spindle is counterbalanced and has a quick return motion. The base is provided with T slots. The table is elevated by a screw. This machine will drill holes up to 1 inch in wrought metal. This machine can be furnished with power feed and an automatic trip or stop motion. A countershaft, with friction pulleys, can be furnished, if the machine is desired for tapping purposes.

Distance from post to centre of table, 10 inches. Greatest distance from spindle to base plate, 41 inches. Greatest distance from spindle to table, 25½ inches. Vertical traverse of spindle, 8 inches. Diameter of spindle, 1 3/16 inches. Hole in spindle fits Morse taper No. 3. Width of belt on cones, 2¼ inches. Diameter of driving pulleys, 9 inches; face of driving pulleys, 2¾ inches. Speed of lower shaft, 240 revolutions per minute. Floor space required, 44 inches by 15 inches. Total height of machine to top of cone, 5 ft. 7 inches. Weight, 600 lbs.

Each.....$90.00.

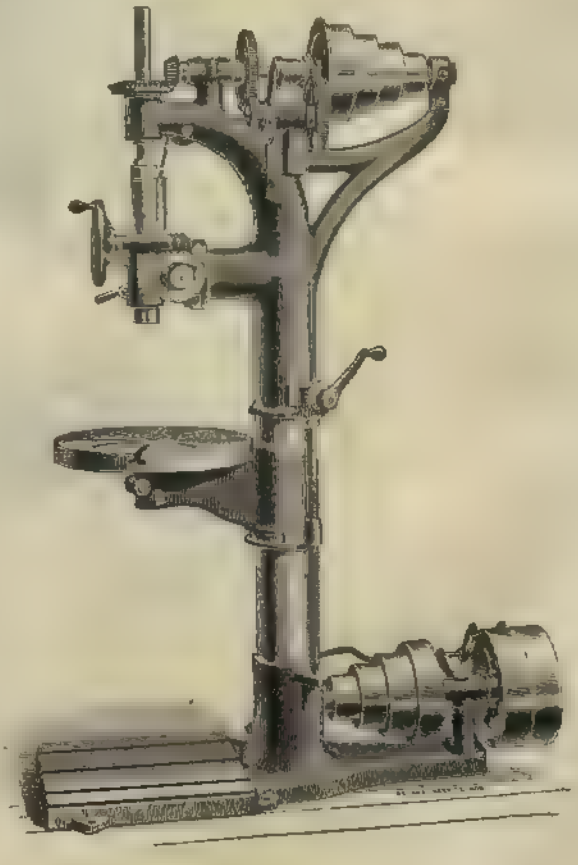
21-INCH UPRIGHT DRILLS.

Stationary Head.

It has back gears and wheel feed. The table is vertically adjustable on the column by a screw and gearing and can be swung to one side, allowing the use of the base for placing work upon; when necessary. The spindle is operated by a worm and worm gear, in connection with a steel rack and pinion, and has the quick approach and return movement common to all our drills. This machine can be furnished with power feed and an automatic trip or stop motion. A countershaft, with friction pulleys, can be furnished, if the machine is desired for tapping purposes.

Diameter of table, 19 inches. Vertical traverse of table, 16½ inches. Distance from post to centre of spindle, 10½ inches. Vertical traverse of spindle, 8 inches. Diameter of spindle, 1½ inches. Hole in spindle fits Morse taper No. 3. Maximum distance from spindle to table, 23 inches. Maximum distance from spindle to base plate, 44 inches. Width of belt on cones, 2½ inches. Diameter of driving pulleys, 11½ inches by 3-inch face. Speed of lower shaft, 240 revolutions per minute. Floor space required, 54 inches by 22 inches. Total height of drill, 78 inches. Weight, 850 lbs.

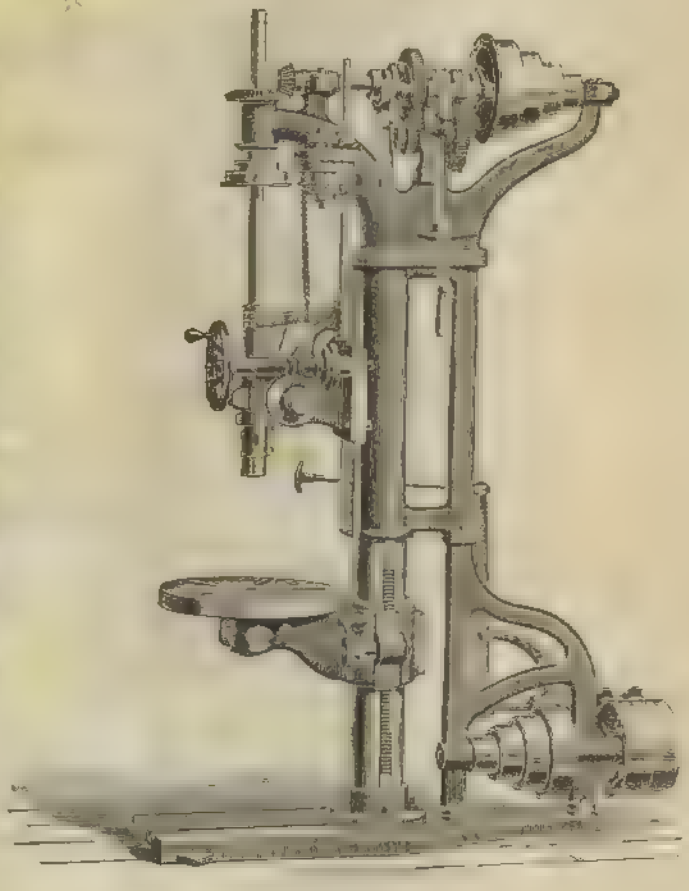
Each.....$125.00.



20, 22, 24, AND 26-INCH UPRIGHT DRILLING MACHINES.

Standard Pattern.

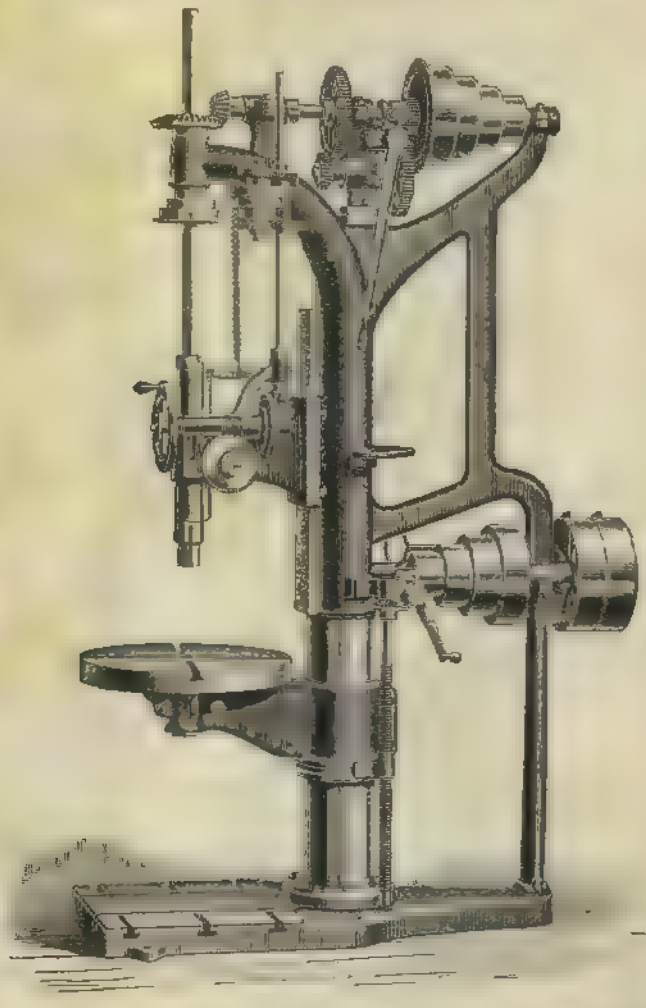
The head is vertically adjustable on the column, by means of a rack and pinion. One chain and weight counterbalance both head and spindle, allowing them to be loosened without danger of falling. It has hand and power feed, and quick return movement. By means of an adjustable lever, the spindle can be instantly adjusted to any point within its range. The patented device for throwing the back gears in or out is operated by the lever descending parallel with the column. The holes in spindle conform to Morse taper. We can furnish any of these machines without back gears, and without self feed, if desired. These drills can be arranged for tapping; for which purpose the countershaft is provided with friction pulleys, imparting opposite rotary motion to the spindle.



	20-inch.	22-inch.	24-inch.	26-inch.	30-inch.	34-inch.	36-inch.
Distance from post to centre of table	10¼ in.	11 in.	12½ in.	13½ in.	15 in.	17 in.	18 in.
Maximum distance from spindle to base plate	43½ in.	47 in.	50 in.	53 in.	54 in.	54 in.	58½ in.
Minimum distance from spindle to base plate	17 in.	19 in.	19 in.	14 in.	13 in.	15 in.	12 in.
Maximum distance from spindle to table	31 in.	34¾ in	37 in.	37 in	38 in	36 in	38½ in.
Vertical traverse of spindle	8½ in.	9 in.	10 in.	12 in	12½ in	12½ in.	16 in.
Hole in spindle conforms to Morse taper	No. 3	No. 3	No. 3	No. 4	No. 4	No. 4	No. 4
Diameter of spindle	1½ in.	1⅝ in.	1⅛ in.	1⅜ in.	2 in.	2 in.	2¼ in.
Ratio of back gearing	4 to 1	4 to 1	6 to 1	4 to 1	4¼ to 1	4¼ to 1	4½ to 1
Width of belt on cones	2½ in.	2½ in.	2¾ in.	3 in.	3 in.	3 in.	3½ in.
Diameter of driving pulleys	10 in.	12 in.	12 in.	14 in.	14 in.	14 in.	16 in.
Face of driving pulleys	3 in.	3 in.	3¼ in.	3½ in.	4 in.	4 in.	5 in.
Speed of lower shaft	240	275	275	210	200	200	150
Total height of machine to top of cone	6 ft. 9 in.	7 ft 2 in.	7 ft 8 in	8 ft. 3 in.	8 ft 6 in	8 ft 8 in.	9 ft 6 in.
Required floor space	19 x 56 in	22 x 55 in	34 x 61 in	65 x 24 in	74 x 31 in	75 x 32 in.	88 x 33 in.
Weight	1 000 lbs.	1,300 lbs	1 800 lbs	2,100 lbs	2 800 lbs.	3,000 lbs	4,000 lbs.
Price	$200 00	$225.00	$280.00	$320.00	$400.00	$470.00	$540 00

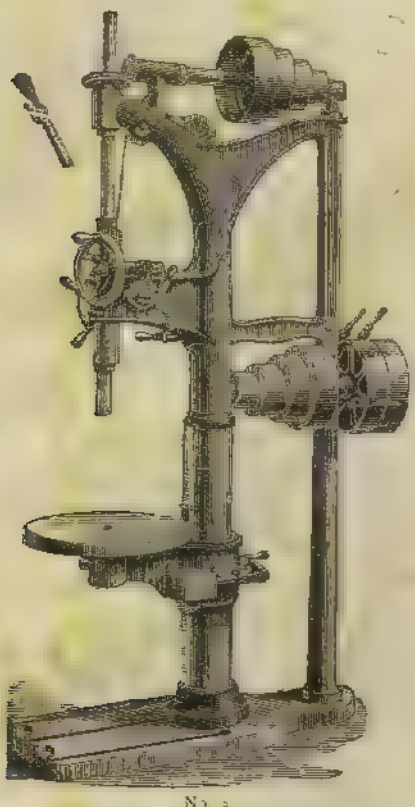
25, 28, AND 32-INCH UPRIGHT DRILLING MACHINES.

Star Pattern.



Our Star Pattern Drills are of lighter design, except in the wearing parts, than the standard machines, and are as accurately made in every respect. The head is vertically adjustable on the column, by means of a rack and pinion. One chain and weight counterbalances both head and spindle, allowing them to be loosened without danger of falling. It has hand and power feed, and quick return movement. By means of an adjustable lever, the spindle can be instantly adjusted to any point within its range. The patented device for throwing the back gears in or out is operated by the lever descending parallel with the column. The holes in spindle conform to Morse taper. We can furnish any of these machines without back gears, and without self feed, if desired. These drills can be arranged for tapping; for which purpose the countershaft is provided with friction pulleys, imparting opposite rotary motion to the spindle.

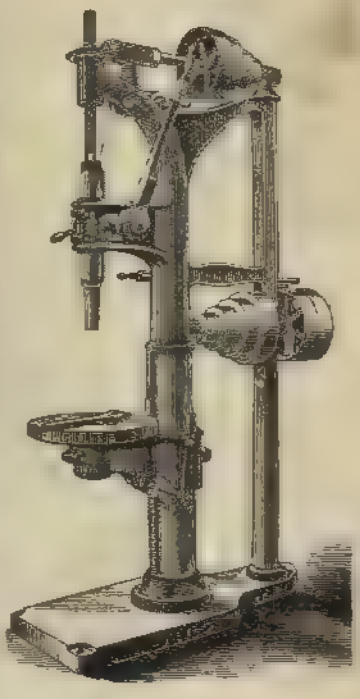
	25-inch.	28-inch.	32-inch.
Distance from post to centre of table	12¾ in.	14½ in.	26½ in.
Maximum distance from spindle to base plate	48 in.	48 in.	54 in.
Minimum distance from spindle to base plate	17 in.	17 in.	15½ in.
Maximum distance from spindle to table	31 in.	31 in.	38 in.
Vertical traverse of spindle	10½ in.	11½ in.	11½ in.
Hole in spindle conforms to Morse taper	No. 3	No. 4	No. 4
Diameter of spindle	1⅝ in.	1⅞ in.	1⅞ in.
Ratio of back gearing	6 to 1	6 to 1	4 to 1
Width of belt on cones	2¾ in.	2¾ in.	3 in.
Diameter of driving pulleys	12 in.	12 in.	14 in.
Face of driving pulleys	3 in.	3 in.	3¼ in.
Speed of lower shaft	275	275	210
Total height of machine to top of cone	90 in.	90 in.	102 in.
Required floor space	60 x 26 in.	63 x 27 in.	66 x 32 in.
Weight	1,600 lbs.	1,850 lbs.	2,300 lbs.
Each	$230.00	$260.00	$315.00



No. 3

MANUFACTURERS' DRILLS.

The accompanying cuts represent the Manufacturers' Drill in two sizes and two arrangements of mechanism for feeding the spindle. Each size is furnished either with hand lever or with hand wheel and worm-gear feed, the spindle having quick return with either arrangement. The spindle of each machine is of steel, counterbalanced and can be instantly adjusted to any point within its range by loosening the friction of the wheel feed, or by withdrawing, by a partial turn of the handle of the lever, the bolt from the notched sleeve on the horizontal shaft in the drill head, and turning the spider wheel which actuates a pinion engaging with a rack in back of the spindle. The drilling table turns in the arm, which may be swung partly around the column when work is to be done on the base table, and may be adjusted vertically on the column by means of worm gear, pinion and rack in No. 3, and ratchet, pinion and rack in No. 1 machine; the rack being protected from dirt and chips by a guard. The base tables, No. 3, only, having grooves, are planed, and attached to the columns at a right angle with the spindle. The countershaft is attached to the frame. The double column, connected to one base, gives the machine desirable stiffness and rigidity under heavy work that single column drills do not have. Dimensions are as follows



No. 1.

Nos.	1	2	3
Diameter of table, ins.	14	18	22
Vertical adjustment of table, ins.	19	22	25
Diameter of spindle, ins.	1⅜	1½	1⅝
Feed movement of spindle, ins.	11	13	15
Greatest distance from spindle to table, ins.	25	28	31
Greatest distance from spindle to base-plate, ins.	39	42	45
Diameter of tight and loose pulleys, ins.	9	10	11
Width of belt used, ins.	2	2½	3
Weight of machine, lbs.	625	800	1,050

Prices upon application.

FITZGERALD'S CENTER TURNING RESTS.

To turn lathe centers or tapers of any desired angle not exceeding 1¼ inches long. This tool is held in the tool post of a lathe or other machine, and consists of a socket carrying a tool in sliding bar, which is operated by means of hand wheel and feed screw. A hardened steel plate, screwed to the socket, is adjusted to the proper angle and set up against the face plate, which is used as a gauge.

Each.....$4.50

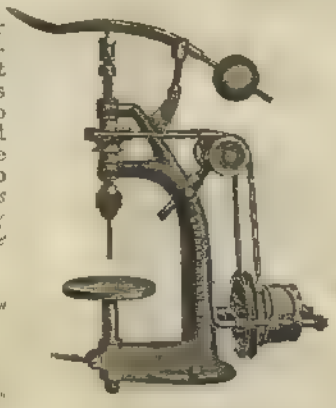
We carry in stock at all times a complete line of twist drills, all sizes, from 2½ inch diameter to No. 80.

GARDAM DRILL PRESS No. 1.

Drill Press No. 1 is made with flange to screw to bench. Diameter of table is 3⅜ inches; rise and fall of table, 1¾ inches; distance from table to spindle, 3 inches; distance from frame to center of table, 3 inches; rise and fall of spindle, 2 inches. The machine is operated by placing the right or left arm on the arm rest which is swiveled to the lever and swings to the right or left, a slight downward motion of the arm will raise the table and so push the work to be drilled against the drill, leaving one hand at liberty to hold the work, and the other to lubricate the drill or cutter, which in light pieces, such as watch plates, frameless spectacles, eye glasses and other small pieces, it will be found to greatly facilitate the work. The table can be raised up to a stop for drilling and counter-sinking holes to one depth. It will drill holes from the finest up to one-quarter inch.

No. 1 A Not Bushed $10.00
No. 1 B With Phosphor Bronze Bushes 11.50

GARDAM SENSITIVE DRILL No. 3.



The cut shows the latest "Gardam" Improved Sensitive Drill designed for light work such as is required in every machine shop, every electrotype establishment every factory where tools, electrical goods, models, jewelry or other light articles requiring small drilling are manufactured. The construction is such as to *preserve the adjustment* of the spindle, to make it *extremely sensitive*, and to allow *no play whatsoever on the spindle*. The spindle has a two speed cone which in combination with the countershaft will give *4 different* speeds the highest 4 revolutions of spindle to 1 of countershaft; the lowest 1 1/16 of spindle to 1 of countershaft. The *adjustable* belt tightener C is so constructed as to *always* keep the belt running in the *pulley planes* (a very important feature for *saving power*). The joint at head of spindle and the split frame at bushings *all provide for the taking up of wear.*

Dimensions and Prices.

Total height ..... 21"
Greatest distance between spindle and table 9 5/8
Vertical motion of spindle ..... 2 1/4"
Vertical motion of table ..... 4 1/2"
Diameter of table ..... 6 1/4"
Distance from center of table to column 5
Diameter of spindle cones for 1/2" round belt ..... 1 1/4" and 2 1/4"
Diameter of tight and loose pulleys 4" face 1
Proper speed for countershaft per min. ..... about 350
Drill capacity ..... 0 to 1/2"
Weight of drill with countershaft ..... 34 lbs.
Weight of drill with countershaft and column ..... 95 lbs.

Price of drill, without chuck, column, or countershaft ..... $ 15.00
Price of drill with countershaft but no chuck or column and shelf .. 20.00
Price of drill with countershaft and Almond chuck, but no column and shelf 25.00
Price of drill with countershaft, Almond chuck and column and shelf 30.00

GARDAM SENSITIVE DRILL No. 2.

This tool is designated for light rapid drilling up to 5-16 in. holes.

The spindle is driven by a 1-in. flat belt. It has two speeds, a cut steel rack and pinion feed, and an adjustable stop to gauge the depth of holes. It is entirely relieved of belt strain, and is counter-balanced by a weight, inside of frame, making it extremely sensitive and uniform to the touch. It is also provided with means for taking up wear or lost motion, and is fitted to "Almond," "Skinner," "Pratt" or other standard drill chucks. The spindle pulley is so arranged that it will not throw oil into the operator's face.

The Counter-Shaft is attached to the frame and can be placed directly under your Line shaft, thus avoiding the trouble and expense of putting up a countershaft and the loose pulley is made smaller in diameter than driving pulley and has angular step for belt to run up on to driving pulley, thereby always keeping the belt slack when not in use and tight when in use.

SPEED:—It can be run at a very high rate of speed, as the pulleys are turned inside and out, and all the rotary parts are perfectly balanced.

Dimensions.

Greatest distance from Spindle to table ..... 9 1/2 inches.
Vertical movement of Spindle ..... 2 1/2 "
Vertical movement of Table ..... 7 "
Diameter of table ..... 9 "
Distance from center of Spindle to frame ..... 5 "
Drill capacity ..... to 5-16
Weight without column ..... 85 pounds.
Weight with column ..... 120 "

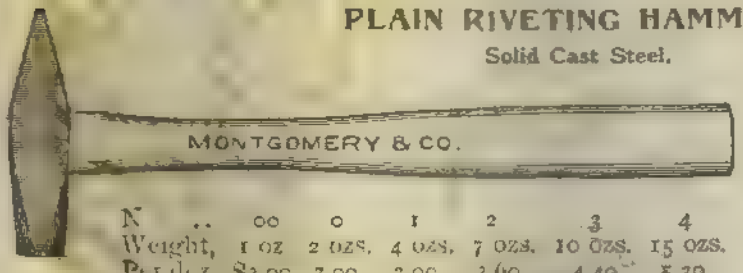
Price of Machine without column or chuck $25.00
Price of "Almond" or "Skinner" chuck, extra 5.50
Price of Column, extra 7 50

HAMMERS.

All Hammers in this book are high grade and warranted. All of them are unconditionally warranted against all defects of manufacture. It don't pay any one to buy a cheap hammer. Of course if any factory or corporation think different and want prices on the competition grades we are always willing to quote—and low prices, too. We always believe in and try to give you the greatest value for the least money.

PLAIN RIVETING HAMMERS.

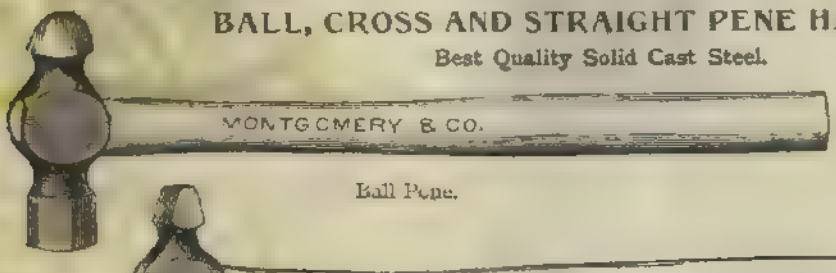
Solid Cast Steel.



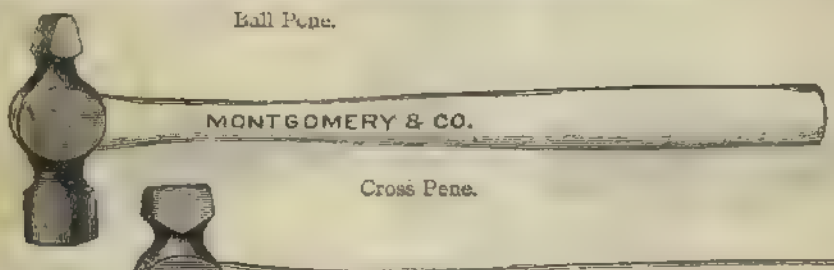
No.	00	0	1	2	3	4	5	6	7
Weight,	1 oz	2 ozs.	4 ozs.	7 ozs.	10 ozs.	15 ozs.	1 lb. 2 ozs.	1 lb. 5 ozs.	1 lb. 10 ozs.
Per doz	$3.00	3.00	3.00	3.60	4.40	5.30	6.20	7.00	8.80
Each...	.25	.25	.25	.30	.37	.45	.52	.59	.74

BALL, CROSS AND STRAIGHT PENE HAMMERS.

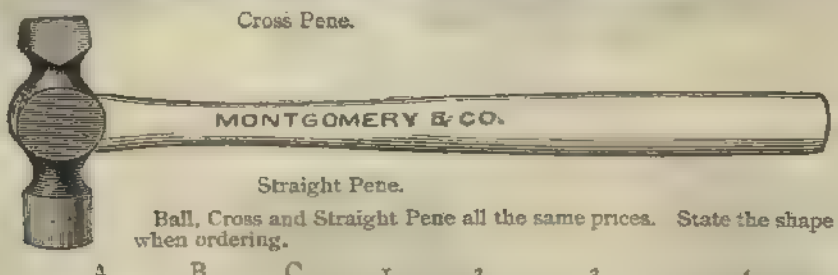
Best Quality Solid Cast Steel.



Ball Pene.



Cross Pene.



Straight Pene.

Ball, Cross and Straight Pene all the same prices. State the shape wanted when ordering.

Nos	A	B	C	1	2	3	4	5
Weight,	1½ oz.	3 ozs.	6 ozs.	12 ozs.	1 lb.	1 lb. 6 ozs.	1 lb. 10 ozs.	2 lbs.
Per doz	$5.00	6.00	7.00	7.25	9.30	11.40	13.00	14.50
Each	.42	.50	.59	.61	.78	.95	1.09	1.22

RAILROAD TRACK MAULS.

Weight 5 to 12 lbs.

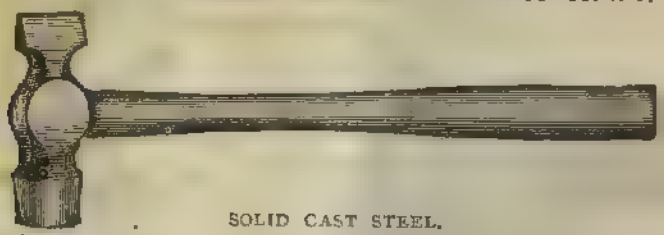
Price per lb..... $0.30

Never buy any Tools or Supplies until you have a written estimate from Montgomery & Co. They are always the cheapest, quality considered.

OCTAGON PATTERN BALL PEIN HAMMERS.

OCTAGON PATTERN CROSS PEIN HAMMERS.

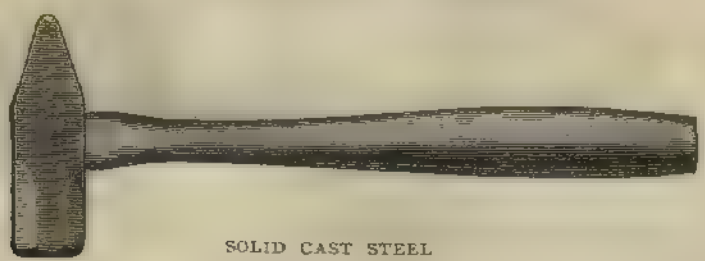
OCTAGON PATTERN STRAIGHT PEIN HAMMERS.



SOLID CAST STEEL.

Nos.	4/0	3/0	2/0	0	1	2	3
Weight	6 ozs.	8 ozs.	12 ozs.	1 lb.	1 lb. 4 ozs.	1 lb. 8 ozs.	1 lb. 12 ozs.
Per dozen	$12 00	12 00	12 00	12 50	13 50	14 50	15 50
Nos	4	5		6	7	8	9
Weight	2 lbs.	2 lbs. 4 ozs.		2 lbs. 8 ozs.	2 lbs. 12 ozs.	3 lbs.	3 lbs. 8 ozs.
Per dozen	$16 50	17 50		19 00	20 50	22 00	24 00

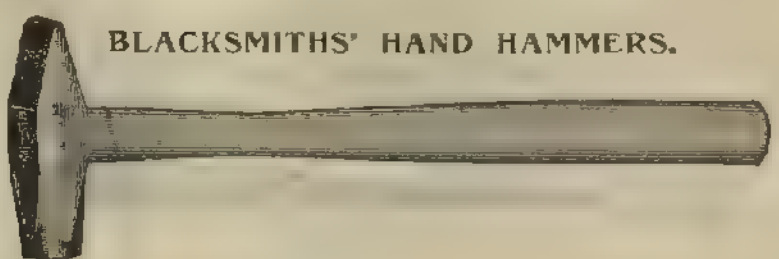
ENGINEERS' HAMMERS.



SOLID CAST STEEL

Nos	0	1	2	3	4	5	6
Weight	1 lb. 2 ozs.	1 lb. 10 ozs.	2 lbs.	2 lbs. 8 ozs.	3 lbs.	3 lbs. 8 ozs.	4 lbs. 8 ozs.
Per dozen	$12 00	13 00	14 00	15 00	16 00	17 00	19 00

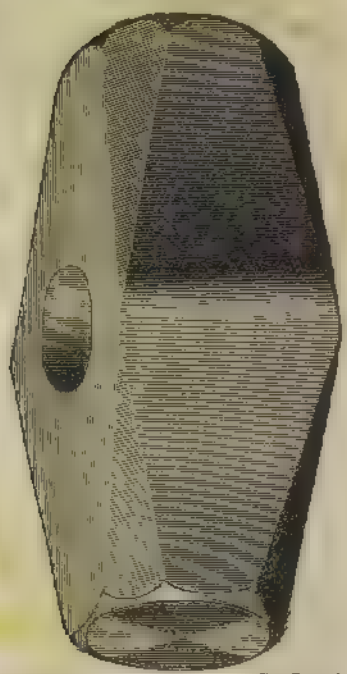
BLACKSMITHS' HAND HAMMERS.



Nos	0	1	2	3	4	5
Weight	1 lb. 10 oz.	2 lb.	2 lb. 10 oz.	3 lb.	3½ lb.	4½ lb.
Per dozen	$13.00	14.00	15.00	16.00	17.00	19.00

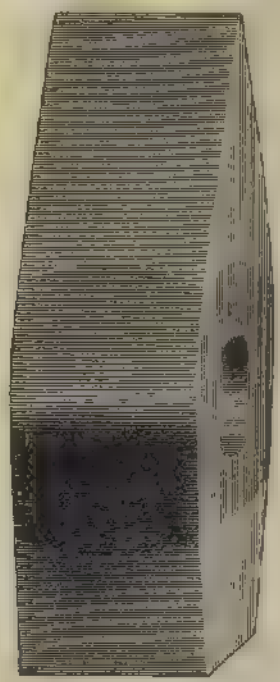
BLACKSMITHS' TOOLS.—CONTINUED.

Oregon Pattern Drilling or Striking Hammers.



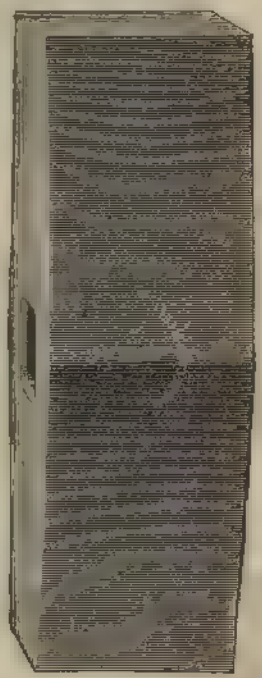
	Per Pound.
Weight, under 3 lbs...	$0.45
" 3 to 5 lbs.....	.36
" 5 lbs. and above.	.30

Single Face Spalling or Stone Hammers.



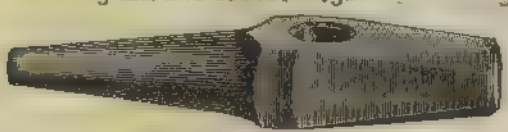
	Per Pound.
Weight, under 3 lbs.....	$0.45
" 3 to 5 lbs.....	.40
" 5 lbs. and above.	.36

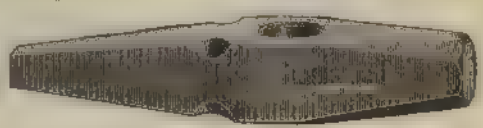
Double Face Spalling or Stone Hammers.



	Per Pound.
Weight, under 3 lbs ...	$0.45
" 3 to 5 lbs.....	.40
" 5 lbs. and above.	.36

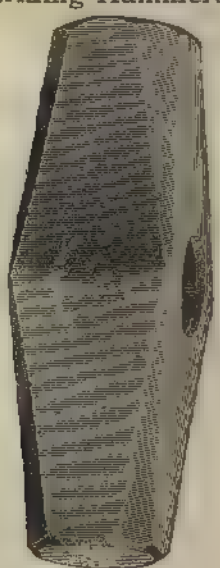
Round and Square Punches.





Assorted, ¼ to 1 inch.....per pound, $0.55

Nevada Pattern Drilling or Striking Hammers.



Under 3 lbs.....per lb., $0.45
3 to 5 lbs..... " .36
5 lbs. and above, " .30

Horseshoe Turning Sledges.

Weight, 6 to 10 pounds.
Per pound.....$0.40

Cross Pein Blacksmiths' Sledges.

Under 3 lbs.....per lb., $0.45
3 to 5 lbs..... " .36
5 lbs. and above. " .30

LITTLE GIANT SWAGE BLOCKS.

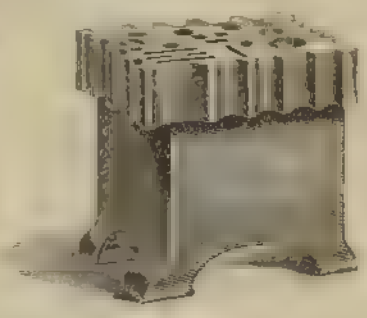
For Machine and Blacksmiths' Shops.

PRICE LIST AND SIZES.

	Not Planed.	Planed Both Sides
Swage Block No. 1, 18 x 18 x 4	$11.00	$13.00
" " 2, 15 x 15 x 4	7.00	8.50
" " 3, 11 x 11 x 4	4.00	5.00

Unless otherwise ordered, swage blocks will be sent *not planed.*

We also furnish Swage Blocks [illegible] as represented in cut. Swage Block and vase [illegible] Where legs are used base can be [illegible] so that edge [illegible] upper side.



PRICE LIST AND SIZES.

	Not Planed.	Planed.
Swage Block No. 11, 18 x 18 x 4 x 16 high	$15 50	$17 50
" " 12, 15 x 15 x 4 x 16 "	12 00	13 50
" " 13, 11 x 11 x 4 x 16 "	7 25	8 25

Unless otherwise ordered, Swage Blocks will be sent *not planed.*

LITTLE GIANT MANDRELS.

Number of Mandrel.	Size of Base.	Height.	Price.
1	10 inches	36 inches	$6.00
2	10 "	46 "	7.75
3	12 "	48 "	11.00
4	16 "	62 "	16.00

These Mandrels are [illegible] on one side to permit work to be grasped [illegible] with tongs. They have square bases, which keep them from being so easily tipped over.

LITTLE GIANT SWAGE BLOCK AND MANDREL COMBINED.

More than 70 shapes and forms are contained in this Swage Block. The base is 15 x 15 x 18, mandrel 35 inches high, making a total of 53 inches. Mandrel is flattened on the side to permit use of tongs to grasp work, and can be used to turn the swage block about so as to bring the form which is desired to be used, on top.

Price, complete..... ..... $25.00

BENCH BLOCKS.

For Use in Straightening Work, Etc.

The top of Block is planed true and the reverse side has a series of half holes, for convenience in working [illegible] bending round and square rod, tires, etc. They are made of [illegible] two sizes.

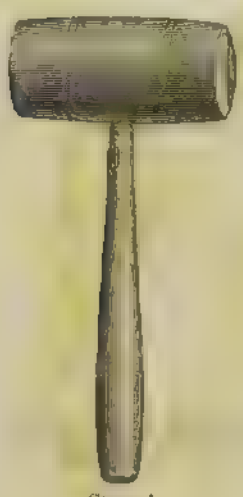
Small size, 2 x 4½ in., each.....$0.40
Large " 2¾ x 6 in., " ..... .50

THE METAL WORKERS' CRAYON AND MECHANICS' COMPANION.

Cheaper and more convenient to handle than any other substance used by mechanics for marking on rough surfaces. Will mark on iron, steel, brass, copper, tin, weather stained lumber, cloth or almost anything. The mark will not burn off when used by blacksmiths, boiler makers and machinists.

Price per dozen..... .... 25c.

HICKORY AND LIGNUM-VITAE MALLETS.



Style A.

Style B.

Style C.

Style A, Hickory.

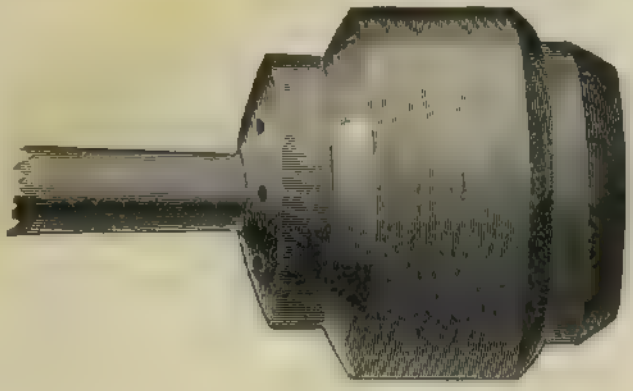
Size of head, 5½x2¼ to 2¾ inches.....per doz., $1.00 Each, 10c.

Style B, Mortised Handles.

Size of heads.....inches,	5x3	5½x3½	6x4
Hickory.....per doz.,	$1.50	2.00	2.50
" .....each,	.15	.20	.25
Lignum-vitæ.....per doz.,	3.00	4.00	5.00
" .....each,	.30	.40	.50

Style C, Mortised Handles.

Size of heads.....inches,	6x2½x3½	6 2x2¾x3¾	7x3x4
Hickory.....per doz.,	$2.00	2.50	3.00
" .....each,	.20	.25	30
Lignum vitæ.....per doz.,	3 75	4.75	5 75
" .....each,	.35	.45	.50

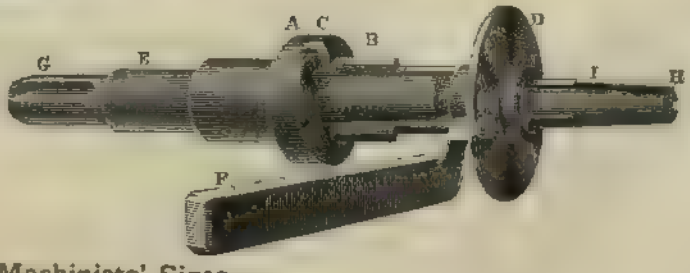


RAW-HIDE MAULS.

Nos....	1	2	3	4	5	6
Weight..	3	4	6	8	10	12 lbs.
Each...	$1.50	1.75	2.00	2.25	2.50	2.75

NEW EXPANDING MANDRELS.

Amateur size takes anything from ⅜ to 1 inch.....each, $5.00



Machinists' Sizes.

No. 1, capacity, ⅜ to 1 inch.....each, $10.00
No. 2, " 1 to 1½ " ..... " 14.00
No. 3, capacity, 1½ to 2 inches, ...each, $18.00
No. 4, " 2 to 3 " ..... " 32.00
No. 5, capacity, 3 to 4 inches.....each, $44.00

On account of the weight of Nos. 4 and 5 a screw is used instead of a sleeve.

ADZE EYE NAIL HAMMERS.

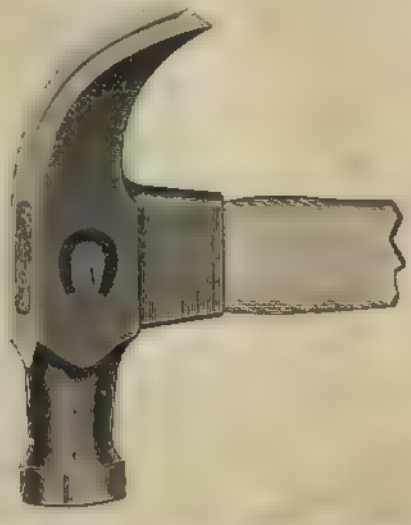
Polished Heads, Hickory Handles.

No.	51	51½	52	53
Weight	1¼ lb.	1 lb.	13 ozs.	7 ozs.
Doz.	$9.00	8.50	8.00	7.50
Each	.75	70	.67	63

ADZE EYE NAIL HAMMERS.

Octagon Polished Nickel Plated, with Cocobola Handles.

No.	21	21½	22
Weight	1¼ lbs.	1 lb.	13 ozs.
Doz.	$15.50	15.00	14.50
Each	1.30	1.25	1.20



Flat or Bell faces are furnished in above Hammers, as desired. Unless otherwise ordered we will send bell faces.

BRICK HAMMERS.

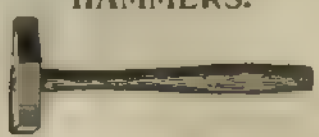
Solid Cast Steel.

	WEIGHT, LB.	OZ.	PER DOZ.
No. 1. Length, 7 inches	1	8	$8.50
No. 2. " 8½ "	1	13	10.00
No. 3. " 8½ "	2	4	12.00

BRAD HAMMERS.

	WEIGHT, OZ.	PER DOZ.
No. 00. Solid cast steel	1	$3.40
No. 0. " "	2	3.40
No. 1. " "	4	3.40
No. 2. " "	7	3.90

GEOLOGISTS' OR STUDENTS' HAMMERS.



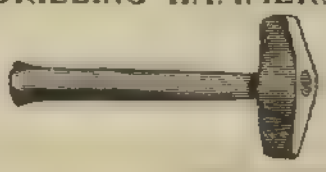
	WEIGHT, LB.	OZ.	PER DOZ.
No. 1. Solid cast steel		14	$6.00
No. 1½ " "	1	4	7.50
No. 2 " "	1	12	9.00

ROOFING HAMMERS.

	WEIGHT, LB.	OZ.	PER DOZ.
No. 1. Solid cast steel	1	4	$7.00
No. 2. " "	1		5.40
No. 3. " "		11	4.50

Roofing Hammers with Octagon faces at same price as Square faces.

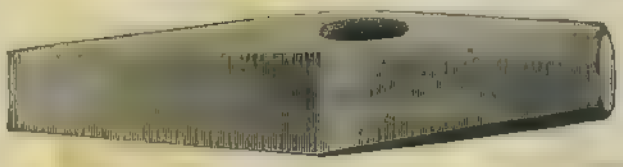
MASONS' OR STONECUTTERS' DRILLING HAMMERS.



	LENGTH, IN.	WEIGHT, LB.	OZ.	PER DOZ.
No. 00. Solid cast steel,	5	3		$17.50
No. 0. " "	5½	3	8	19.25
No. 1. " "	6	4		21.00
No. 2. " "	6½	4	8	22.75
No. 3. " "	7	5		24.50

Masons' Drilling Hammers, *unpolished*, will be furnished $1. less per doz.

BLACKSMITHS' TOOLS.



Cold Chisels.

Weight, 1 to 3 pounds.

Per pound.....$0.50

Hot Chisels.

Weight, 1 to 3 pounds.

Per pound.....$0.50

Top Swedges.

Assorted, ¼ to 4½ inch.

Per pound.....$0.50

Bottom Swedges.

Assorted, ¼ to 4½ inch.

Per pound.....$0.50

Flatters.

Assorted, 1 to 4½ inch.

Per pound.....$0.50

Hardies.

Shanks, ½ to 1¼ inch.

Per pound.....$0.50

Top Fullers.

Assorted, ¼ to 3 inch.

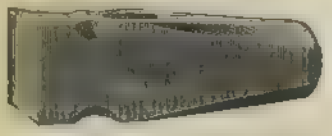
Per pound.....$0.50

Bottom Fullers.

Assorted, ¼ to 3 inch.

Per pound.....$0.50

Set Hammers.



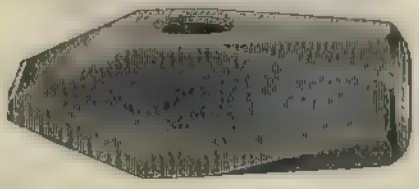
Assorted, 1 to 2½ inch.....per pound, $0.50

Heading Tools.

Assorted, ½ to 1½ inch.

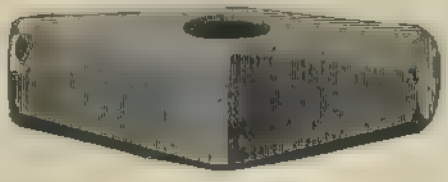
Per pound.....$0.50

Oil-Finished Blacksmiths' Hand Hammers.

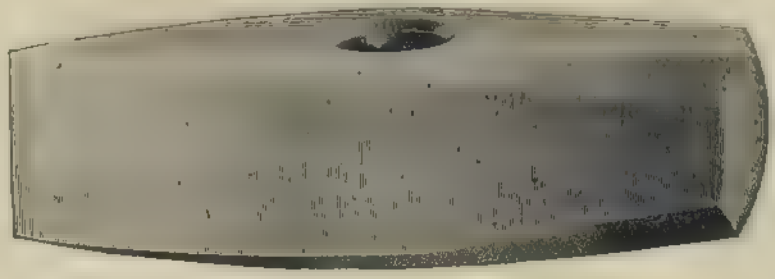


Weight, under 3 lbs.....per pound, $0.45
" 3 to 5 lbs., incl..... " .36

Hand Drilling Hammers.



Weight, under 3 lbs.....per pound, $0.45
" 3 to 5 lbs. incl..... " .40



Stone Sledges.

	Per Pound.
Weight, under 3 lbs.	$0.45
" 3 to 5 lbs.	.36
" 5 lbs. and above	.30

MALLETS.

Our hickory and lignum-vitæ mallets are superior to any other make. Only the choicest wood is used, and we guarantee them to last three times as long as the Mallets ordinarily sold.

		Lignum-vitæ.		Hickory	
		Each.	Per Dozen.	Each.	Per Dozen
No 1, handle screwed in,	4 x 6 inches	60c.	$4.50	30c.	$3.00
No 2, " "	3½ x 5½ "	45c	3.50	25c.	2.50
No. 3, " "	3 x 5 "	40c.	2.75	20c.	1.25
No 4, " "	2½ x 4½ "	35c.	2.25	20c.	1.00
No. 5, " driven in,	2½ x 4 "	30c.	2.00	15c.	.75
No. 6, " "	2½ x 3¾ "	25c.	1.75	15c.	.75
No 7, " "	2 x 3 "	20c.	1.60	12c.	.70
No. 8, " "	1½ x 3 "	20c.	1.50	10c.	.60

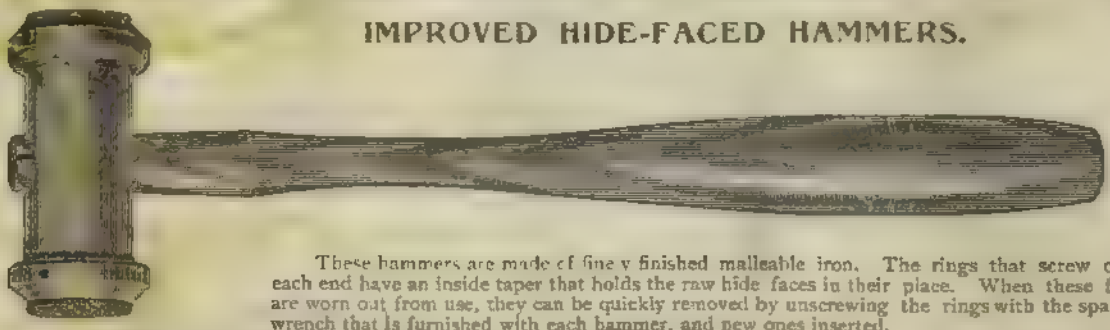
Square Mallets, (Hickory).

No 1, handle screwed in,	4 x 6 inches	40c. 3.50
No 2, " "	3½ x 5½ "	35c. 3.00
No 3, " "	3½ x 5 "	30c. 2.50

Box Mallets.

No 1, hickory, with heavy malleable iron rings	60c. 5.00
No 2, round iron, with mortised hickory ends, 2½ inches in diameter	50c. 6.00
No 3, heavy malleable iron socket, mortised hickory ends, 3 inches in diameter	75c. 9.00

IMPROVED HIDE-FACED HAMMERS.



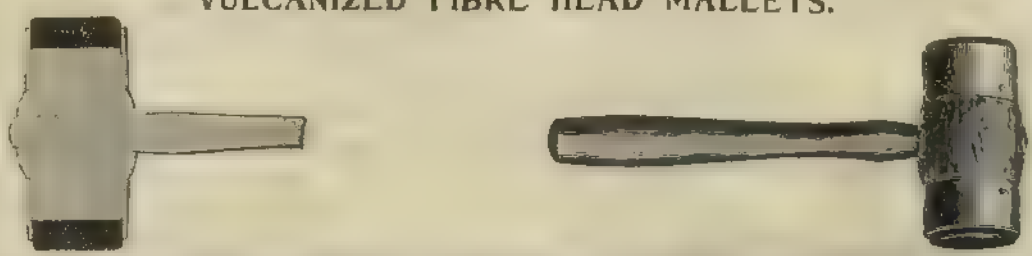
These hammers are made of finely finished malleable iron. The rings that screw on at each end have an inside taper that holds the raw hide faces in their place. When these faces are worn out from use, they can be quickly removed by unscrewing the rings with the spanner wrench that is furnished with each hammer, and new ones inserted.

It takes the place of the mallet without the bulk of the latter.

For flattening metal or removing dents from watch cases, etc. the jeweler or any other metal worker will find it an excellent tool as a hard elastic blow can be given without injury to the work.

5 oz.	per dozen. $6.00
5 " single, by mail	.55
10 "	per dozen, 6.00
10 " single, by mail	.60
Extra faces, 5 or 10 oz, pairs	per dozen, .60

VULCANIZED FIBRE HEAD MALLETS.

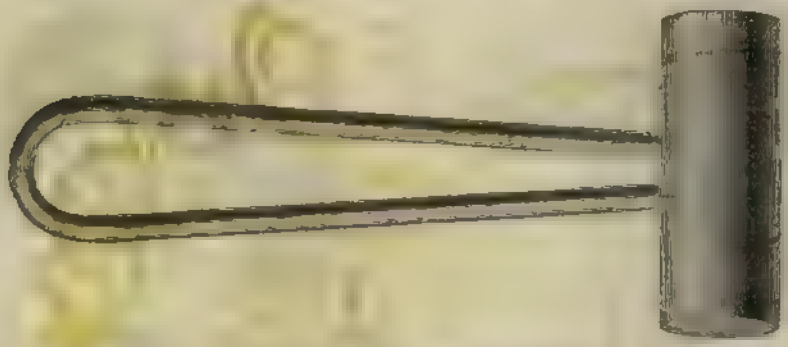


Wood body and handle, thoroughly kiln-dried. Malleable bands. Heads easily replaced.

The heads of our mallets and chisel handles are treated with a layer of vulcanized fibre. This is a vegetable compound which by means of chemical processes and being subjected to a pressure of 200 tons is changed to a solid. It is tough, elastic and practically indestructible.

We claim that a mallet or handle re-enforced with this material will outwear ten ordinary ones.

No. 2,	2 inches in diameter	per dozen, $6.50
No. 2½,	2½ " " "	" 7.50
No. 3,	3 " " "	" 9.00



BRASS HAMMERS.

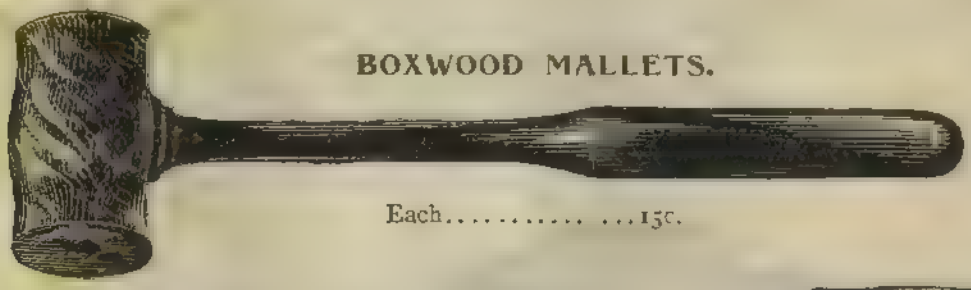
For use on finished work. No machine is complete without this useful tool, and it will save its cost many times over in the amount of brass which would otherwise be destroyed.

Size	Weight.	Per doz.
½ x 1 ¼ in.	2 oz.	$ 2.40
⅝ x 1 ¾ "	4 "	3.60
¾ x 2 ¼ "	6 "	4.80
1 x 3 "	14 "	9.00
1 ¼ x 3 ¼ "	1½ lbs.	12.00

PATENT RAW HIDE MALLETS,
Loaded.

These Mallets are of same sizes as our ordinary Raw Hide Mallets, Nos. 7 to 11 inclusive, but having a central strip of soft metal, filled up with the same, the weight is doubled, without increasing the size. They are numbered 7 to 11 to avoid confusion.

No.	Diam.	Length.	Weight.	Each
7	1 ¾ in.	2¾ in.	7 oz.	$0.30
8	1 ¾ "	3 "	12 "	.35
9	1 ¾ "	3 ⅛ "	15 "	.40
10	2 "	3 ¼ "	20 "	.50
11	2¼ "	4 ¼ "	42 "	1.00



BOXWOOD MALLETS.

Each..... ...15c.

PATENT HIDE-FACED HAMMERS.

These Hammers are invaluable for machinists, workers in brass and silver, jewelry manufacturers, or for anyone who needs to strike a hard blow without bruising the material he is at work upon. One extra set of faces is sold with each Hammer, and when worn out they can be renewed at slight cost, the old ones being easily removed by pressing the Hammer in a vise and turning the screw, with a few blows on the side of the face will easily knock it out. It will wear down very much and still be serviceable. **The new faces need no fastening except a tight fitting in the shell.**

Nos	1	2	3	4	4 ex.	5
Weight	1	1¼	2	3½	4½	5½ lb
Each	$0.75	.95	1.15	1.65	1 85	2 35
Extra faces.... per pair,	.16	.20	.25	.35	.35	.50

One pair of extra faces gratis with each Hammer

PATENT RAWHIDE MALLETS.

These are light Mallets, made entirely of hide (except the handle) and suited to a variety of uses.

Nos	0	1	2	3	4	5
Diameter	1	1¼	1½	1¾	2 in.	
Length	2½	2½	2¾	3	3¼ "	
Weight	1½	3	5	7	10 oz.	
Each	$.20	25	30	35	.45	1.00

DOGWOOD MALLETS.

Nos	1	2	3	4	5	6	7	8	9	10	11	12
Diameter of face	1¼	1½	1¾	2	2⅛	2¼	2½	2¾	2½	2¾	3	3¼ in.
Length of head	2 ¼	2½	3	3½	3 ¾	4	4½	4½	4¾	5	5 ½	6 "
Each	10c	12c.	14c.	15c	18c	21c.	25c	27c.	30c	32c.	35c.	40c.

RANDALL'S PATENT COPPER-TIPPED HAMMERS.

For Machinists' and Engineers' Use in Hammering Finished Work.

The hammer head is made of malleable iron, the ends of which are provided with a socket into which the copper tips are fitted and held in position by a set screw. In case one corner of the tip becomes battered more than the other, it may be reversed by loosening the set screw until the worn end can be removed, hammered into shape, and inserted again. The tips are made from the finest copper (not cast). Extra tips furnished at a slight additional cost. A small bar in mirror in the head makes a sure location, and prevents driving tip through. The hammer head with proper care, will last a lifetime.

EACH HAMMER COMPLETE, WITH HANDLE AND TIPS.

Nos	1	2	3
Weight, ounces	12½	15½	24
Black	per dozen, $18.00	20.40	24.00
Nickel	" 24.00	26.40	30.00

COPPER TIPS (EXTRA).

Nos	1	2	3
Per dozen pairs	$6.00	7.20	8.40

BABBITT METAL HAMMERS.

For straightening light or finished work that a steel hammer would be likely to injure. Weight of head, one-half pound.

Each ..... 30c.

COPPER HAMMERS.

For Use on Finished Work.

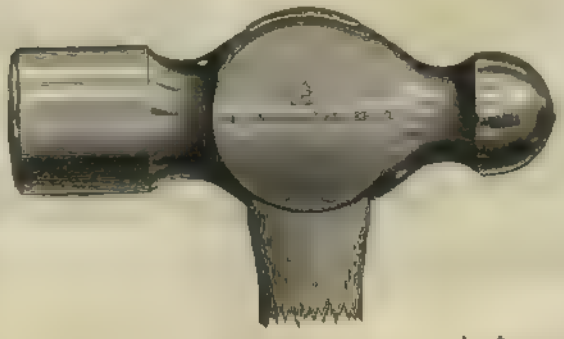
Weight, ½ to 10 pounds.

Per pound ..... 50c.

BILLINGS' BALL PENE MACHINISTS' HAMMERS.

Drop Forged of Best Tool Steel.

In calling the attention of Machinists, Tool Makers, Die Sinkers to our line of Hammers, we desire to state that we have endeavored to have on the market a superior tool in every respect as to material, design, temper and finish. Everything has been considered in manufacturing these tools, including the size, shape and "hang" of the handles. Every hammer is stamped with the trade mark, as in cut, and with the name, "The Billings & Spencer Co., Warranted Tool Steel," and we guarantee them satisfactory.



Hammers are sent with handles only.

No. 1, Weight, without Handle,	¼ lb.	each, $1.00
No. 2, " " "	¾ lb.	" 1.40
No. 3, " " "	1¼ lb.	" 1.70
No. 4, " " "	1½ lb.	" 2.00

RIVETING-HAMMER HANDLES.

For Stubs' and Swiss Watch and Clock Hammers.

	Small.	Medium.	Large.
White wood, each,	5c.	5c.	5c.
Ebony "	8c.	10c.	15c.

"DIAMOND" SCREW PLATES.

Each.

"Diamond" A.—"Diamond" Plate with Tap Wrench; Plate, 5 in long; Tap Wrench, 5 in. long; 6 Taps and 6 Dies, cutting 4^{36}, 6^{32}, 8^{32}, 10^{24}, 12^{24}, 14^{20} $4.90

"Diamond" B.—"Diamond" Plate with Tap Wrench; Plate, 5 in. long; Tap Wrench, 5 in. long; 5 Taps and 5 Dies, cutting 4^{36}, 6^{32}, 8^{32}, 10^{24}, 12^{24} 4.40

"Diamond" C.—"Diamond" Plate with Tap Wrench; Plate, 5 in. long; Tap Wrench, 5 in. long; 4 Taps and 4 Dies, cutting 6^{32}, 8^{32}, 10^{24}, 12^{24} 3.90

"Diamond" D.—"Diamond" Plate with Tap Wrench; Plate, 5 in. long; Tap Wrench, 5 in. long; 8 Taps and 8 Dies, cutting 2^{56}, 3^{48}, 4^{36}, 6^{32}, 8^{32}, 10^{24}, 12^{24}, 14^{20} 6.20

"Diamond" E.—"Diamond" Plate with Tap Wrench; Plate, 5 in long; Tap Wrench, 5 in long; 10 Taps and 10 Dies, cutting 2^{56}, 3^{48}, 4^{36}, 5^{32}, 6^{32}, 8^{32}, 10^{32}, 10^{24}, 12^{24}, 14^{20} 7.25

"Diamond" N.—"Diamond" Plate with Tap Wrench; Plate, 7 in. long; Tap Wrench, 8 in. long; 5 Taps and 5 Dies, cutting 4^{36}, 6^{32}, 8^{32}, 10^{24}, 12^{24} 5.65

"Diamond" O.—"Diamond" Plate with Tap Wrench, Plate, 7 in. long; Tap Wrench, 8 in long; 7 Taps and 7 Dies, cutting 4^{36}, 6^{32}, 8^{32}, 10^{24}, 12^{24}, 14^{20}, 16^{18} 6.75

"Diamond" P.—"Diamond" Plate with Tap Wrench; Plate, 7 in. long; Tap Wrench, 8 in. long; 8 Taps and 8 Dies, cutting 4^{36}, 6^{32}, 8^{32}, 10^{24}, 12^{24}, 14^{20}, 16^{18}, 18^{18} 7.30

Dies fitting above Plates are five-eighths of an inch in diameter. These Plates are furnished with standard size Plug Machine Screw Taps. All complete Plates, as catalogued, are furnished with hardwood cases.

"Diamond" Q.—"Diamond" Plate with Tap Wrench; Plate, 7 in. long; Tap Wrench, 8 in. long; 5 Taps and 5 Dies, cutting $\frac{1}{8}^{32}$, $\frac{5}{32}^{32}$, $\frac{3}{16}^{24}$, $\frac{7}{32}^{24}$, $\frac{1}{4}^{20}$ $5.75

"Diamond" R.—"Diamond" Plate with Tap Wrench; Plate, 7 in. long; Tap Wrench, 8 in long; 6 Taps and 6 Dies, cutting $\frac{1}{8}^{32}$, $\frac{5}{32}^{32}$, $\frac{3}{16}^{24}$, $\frac{7}{32}^{24}$, $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$ 6.50

"Diamond" S.—"Diamond" Plate with Tap Wrench; Plate, 7 in. long; Tap Wrench, 8 in. long; 5 Taps and 5 Dies, cutting $\frac{1}{16}^{72}$, $\frac{1}{8}^{32}$, $\frac{3}{16}^{24}$, $\frac{1}{4}^{28}$, $\frac{5}{16}^{18}$ 5.75

"Diamond" T.—"Diamond" Plate with Tap Wrench; Plate, 7 in. long; Tap Wrench, 8 in. long; 9 Taps and 9 Dies, cutting $\frac{1}{16}^{72}$, $\frac{3}{32}^{56}$, $\frac{1}{8}^{32}$, $\frac{5}{32}^{32}$, $\frac{3}{16}^{24}$, $\frac{7}{32}^{24}$, $\frac{1}{4}^{20}$, $\frac{9}{32}^{20}$, $\frac{5}{16}^{18}$ 8.50

Dies fitting above Plates are thirteen-sixteenths of an inch in diameter. We furnish the above Plates with Plug Machine Screw Taps. All "Diamond" Plates are put up in hardwood cases.

DIAMOND SCREW PLATES.—CONTINUED.

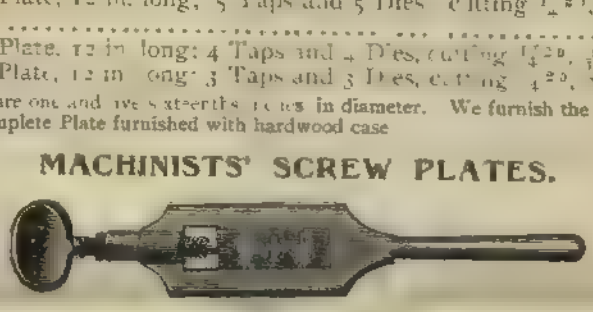
		Each
No. 16.—	"Diamond" Plate 9 in. long; 5 Taps and 5 Dies, cutting $\frac{3}{16}^{24}$, $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}$	$6 60
No. 17.—	"Diamond" Plate, 9 in. long; 4 Taps and 4 Dies, cutting $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$	5·70
No. 17A.	"Diamond" Plate, 9 in. long; 3 Taps and 3 Dies, cutting $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$	4 60
No. 18.—	"Diamond" Plate, 9 in. long; 6 Taps and 6 Dies, cutting 12^{24}, $\frac{1}{4}^{20}$, 16^{18}, 18^{18}, 20^{18}, 24^{16}	6.90
No. 18A.—	"Diamond" Plate, 9 in. long; 5 Taps and 5 Dies, cutting 12^{24}, $\frac{1}{4}^{20}$, 16^{18}, 18^{18}, 20^{18}	6.00
No. 19.—	"Diamond" Plate, 9 in. long; 4 Taps and 4 Dies, cutting 14^{24}, 16^{18}, 18^{18}, 20^{18}	5.00

Dies fitting above Plates are one inch in diameter. Dies Nos. 16, 17 and 17A are furnished with Machinists' Taper Hand Taps. Plates, Nos. 18, 18A, and 19 are furnished with Plug Machine Screw Taps. Each complete Plate furnished with hardwood case.

		Each.
No. 21.	"Diamond" Plate, 12 in. long; 6 Taps and 6 Dies, cutting $\frac{3}{16}^{24}$, $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{12}$	$9.60
No. 22.	"Diamond" Plate, 12 in. long; 5 Taps and 5 Dies, cutting $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{12}$	8.40
No. 23.	"Diamond" Plate, 12 in. long; 4 Taps and 4 Dies, cutting $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{1}{2}^{12}$	7.00
No. 24.	"Diamond" Plate, 12 in. long; 3 Taps and 3 Dies, cutting $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$	5.75

Dies fitting above Plates are one and five sixteenths inches in diameter. We furnish the above Plates with Machinists' Taper Hand Taps. Each complete Plate furnished with hardwood case

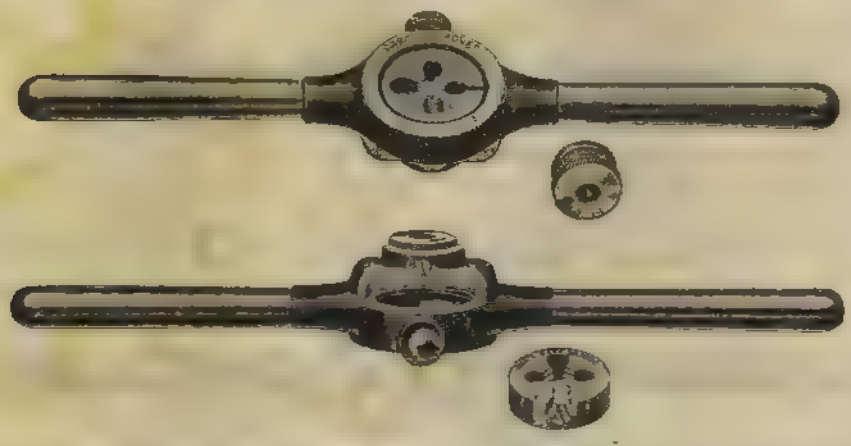
MACHINISTS' SCREW PLATES.



		Each.
No. OO.	6 inches long, 4 pair Dies and 4 Taps, cutting 2^{64}, 3^{56}, 4^{48}, 6^{40}	$2.50
No. OO A.	6 inches long, 3 pair Dies and 4 Taps, cutting 4^{36}, 6^{32} 8^{32}, 10^{24}	2 50
No. OO B.	For Gunsmiths, 6 inches long, 4 pair Dies and 4 Taps, cutting 4^{48}, 6^{40}, 8^{36}, 10^{32}	2 50
No. OO C.	" 6 inches long 4 pair Dies and 4 Taps, cutting 4^{4}, 6^{36}, 8^{34}, 10^{3}	2.50
No. O.	7½ inches long, 4 pair Dies and 4 Taps, cutting 4^{48}, 6^{4}, 10^{32}, 14^{24}	3.50
No. O A.	7½ inches long, 3 pair Dies and 4 Taps, cutting 10^{24}, 12^{24}, 14^{20}, 16^{18}	3.25
No. O B.	7½ inches long, 4 pair Dies and 4 Taps, cutting 8^{36} 10^{24}, 12^{20}, 14^{28}	3.25
No. O C.	7½ inches long, 4 pair Dies and 4 Taps, cutting 8^{32}, 10^{30}, 12^{28}, 14^{2}	3.25

		Each.
No. 1½.	9 inches long, 4 pair Dies and 4 Taps, cutting 6^{32}, 8^{30}, 10^{24}, 14^{20}	$3.25
No. 1½ A.	9 inches long, 3 pair Dies and 4 Taps, cutting 14^{20}, 16^{18}, 18^{18}, 20^{18}	3·40
No. 1½ B.	For Gunsmiths, 9 inches long, 3 pair Dies and 4 Taps cutting 12^{36}, 14^{36}, 16^{24}, 18^{28}	3 50
No. 1½ C.	" 9 inches long, 3 pair Dies and 4 Taps cutting 12^{30}, 14^{30}, 16^{30}, 18^{28}	3 50

CARD'S IMPROVED SCREW PLATES.



Each

No. 50. Card's Improved Plate with Tap Wrench, Plate, 7 in. long, Tap Wrench, 7½ in. long. 5 Taps and 5 Dies cutting 4^{36}, 6^{32}, 8^{32}, 10^{24}, 12^{24}..... $5 75

No 51. Card's Improved Plate with Tap Wrench, Plate, 7 in. long, Tap Wrench, 7½ in. long, 7 Taps and 7 Dies, cutting 4^{36}, 6^{32}, 8^{32}, 10^{24}, 12^{24}, 14^{20}, 16^{18}..... 7 00

No. 52. Card's Improved Plate with Tap Wrench, Plate, 7 in. long, Tap Wrench, 7½ in. long, 8 Taps and 8 Dies, cutting, 4^{36}, 6^{32}, 8^{32}, 10^{24}, 12^{24}, 14^{20}, 16^{18}, 18^{18}..... 8 00

No 53. Card's Improved Plate with Tap Wrench, Plate, 7 in. long, Tap Wrench, 7½ in. long 5 Taps and 5 Dies, cutting $^{1}32$, $\frac{5}{32}$, $\frac{7}{32}$-4, $\frac{9}{32}$24, 4^{20}..... 5.75

No. 54. Card's Improved Plate with Tap Wrench, Plate, 7 in. long, Tap Wrench, 7½ in. long 6 Taps and 6 Dies, cutting 6^{32}, $\frac{5}{32}$32, $\frac{3}{16}$24, $\frac{7}{32}$24, $\frac{1}{4}$20, $\frac{5}{16}$18..... 6.50

No. 55. Card's Improved Plate with Tap Wrench, Plate, 7 in. long, Tap Wrench, 7½ in. long 4 Taps and 4 Dies, cutting 5^{32}, $\frac{3}{16}$24, $\frac{1}{4}$20, $\frac{5}{16}$18..... 5.25

No 56. Card's Improved Plate with Tap Wrench, Plate, 7 in. long, Tap Wrench, 7½ in. long. 7 Taps and 7 Dies, cutting $\frac{1}{8}$32, $\frac{5}{32}$32, $\frac{3}{16}$24, $\frac{7}{32}$24, $\frac{1}{4}$20, $\frac{9}{32}$20, $\frac{5}{16}$18..... 7.00

Dies fitting above Plates are thirteen sixteenths of an inch in diameter. Each complete Plate furnished with hardwood case

CARD'S WATCHMAKERS' SCREW PLATES.

Price Each.

No. 1. Stock, 3¼ inches long; Dies, $\frac{7}{8}$ inch in diameter; 4 Taps and 5 Dies, including Tap Wrench Die; cutting 80, 100, 120, 14- threads $3.50

The sizes and threads in this Plate correspond to the sizes of watch-screws

Jewelers' Screw Plate No. 1. Stock, 3¼ inches long; Dies, $\frac{7}{8}$ inch in diameter; 4 Taps and 5 Dies, including Tap Wrench Die; cutting $\frac{1}{16}$, 72; $\frac{3}{32}$, 60; $\frac{1}{8}$, 50; $\frac{3}{32}$, 40..... $3.50

We have selected these sizes and threads as those best suited to the uses of jewelers.

MACHINISTS' SCREW PLATES.

Arranged with Fine Thread Taps and Dies for Bicycle Work.

Price Each

No 2½ J. 11½ inches long, 4 pair Dies and 4 Taps; cutting $\frac{5}{16}$, 20, $\frac{3}{8}$, 20; $\frac{7}{16}$, 20, $\frac{1}{2}$, 20 $6.55

No 2½ K " " " " " " $\frac{5}{16}$, 22; $\frac{3}{8}$, 22, $\frac{7}{16}$, 22; $\frac{1}{2}$, 22 6 55

No 2½ L. " " " " " " $\frac{5}{16}$, 24, $\frac{3}{8}$, 24; $\frac{7}{16}$, 24; $\frac{1}{2}$, 24 6 55

No. 2½ M. " " " " " " $\frac{5}{16}$, 26; $\frac{3}{8}$, 26; $\frac{7}{16}$, 26; $\frac{1}{2}$, 26 6 55

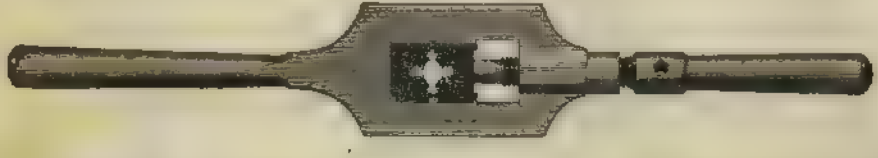
No. 2½ Jobbing. " " 5 pair Dies and 5 Taps; cutting $\frac{1}{4}$, 32; $\frac{5}{16}$, 28, $\frac{3}{8}$, 24; $\frac{7}{16}$, 22, $\frac{1}{2}$, 20, ... 7.50

MACHINISTS' SCREW PLATES.—CONTINUED.

		Each.
No. 1.	7 inches long, 3 pair Dies and 6 Taps, cutting 4^{40}, 6^{40}, 4^{36}, 6^{36}, 8^{32}, 10^{32}	$4.50
No. 2.	8 inches long, 3 pair Dies and 6 Taps, cutting 6^{32}, 8^{32}, 10^{24}, 12^{24}, 14^{20}, 16^{20}	4.50
No. 2 A.	8 inches long, 3 pair Dies and 6 Taps, cutting 12^{24}, 14^{24}, 12^{22}, 14^{22}, 16^{20}, 18^{20}	5 00
No. 2 B.	8 inches long, 3 pair Dies and 6 Taps, cutting 12^{26}, 14^{26}, 12^{28}, 14^{28}, 12^{30}, 14^{30}	5.00

The above Plates are furnished with Plug Machine Screw Taps, standard sizes.

		Each.
No. 2½.	11½ inches long, 3 pair Dies and 3 Taps, cutting $\frac{1}{4}^{20}$, $\frac{3}{8}^{16}$, $\frac{1}{2}^{12}$	$5.00
No. 2½ A.	11½ inches long, 3 pair Dies and 3 Taps, cutting $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$	4.80
No. 2½ B.	11½ inches long, 3 pair Dies and 3 Taps, cutting $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$	5.00
No. 2½ C.	11½ inches long, 5 pair Dies and 5 Taps, cutting $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{12}$	7.50
No. 3.	14 inches long, 3 pair Dies and 3 Taps, cutting $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{12}$	5.50
No. 3 A.	14 inches long, 3 pair Dies and 3 Taps, cutting $\frac{3}{8}^{16}$, $\frac{1}{2}^{12}$, $\frac{5}{8}^{11}$	5.80
No. 3 B.	14 inches long, 3 pair Dies and 3 Taps, cutting $\frac{7}{16}^{14}$, $\frac{1}{2}^{12}$, $\frac{5}{8}^{11}$	5.90
No. 3 C.	14 inches long, 4 pair Dies and 4 Taps, cutting $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{12}$, $\frac{5}{8}^{11}$	7.15
No. 3 D.	14 inches long, 6 pair Dies and 6 Taps, cutting $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{12}$, $\frac{5}{8}^{11}$	9.60
No. 4 A.	19 inches long, 3 pair Dies and 3 Taps, cutting $\frac{1}{2}^{12}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$	6.90
No. 4 B.	19 inches long, 7 pair Dies and 7 Taps, cutting $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{12}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$	13.50

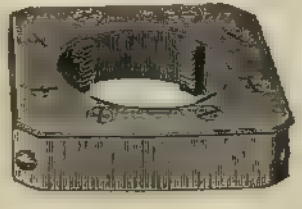


		Each.
No. 7 A.	22 inches long, 3 pair Dies and 3 Taps, cutting $\frac{3}{4}^{10}$, $\frac{7}{8}^{9}$, 1^{8}	$10.00
No. 7 B.	22 inches long, 9 pair Dies and 9 Taps, cutting $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{12}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$, $\frac{7}{8}^{9}$, 1^{8}	21.00
No. 7 C.	22 inches long, 7 pair Dies and 7 Taps, cutting $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{12}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$, $\frac{7}{8}^{9}$, 1^{8}	18.00
No. 8 A.	26 inches long 4 pair Dies and 4 Taps, cutting $\frac{3}{4}^{10}$, $\frac{7}{8}^{9}$, 1^{8}, $1\frac{1}{4}^{7}$	13.60
No. 8 B.	26 inches long, 7 pair Dies and 7 Taps, cutting $\frac{1}{2}^{12}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$, $\frac{7}{8}^{9}$, 1^{8}, $1\frac{1}{8}^{7}$, $1\frac{1}{4}^{7}$	24.00
No. 10 A.	48 inches long, 6 pair Dies and 6 Taps, cutting $1\frac{3}{8}^{8}$, $1\frac{1}{2}^{8}$, $1\frac{5}{8}5\frac{1}{2}$, $1\frac{3}{4}^{8}$, $1\frac{7}{8}^{8}$, $2\ 4\frac{1}{2}$	50.00
No. 10 B.	48 inches long, 9 pair Dies and 9 Taps, cutting 1^{8}, $1\frac{1}{8}^{7}$, $1\frac{1}{4}^{7}$, $1\frac{3}{8}^{6}$, $1\frac{1}{2}^{6}$, $1\frac{5}{8}5\frac{1}{2}$, $1\frac{3}{4}^{5}$, $1\frac{7}{8}^{5}$, $2\ 4\frac{1}{2}$	64.50
No. 10 C.	48 inches long, 11 pair Dies and 11 Taps, cutting $\frac{3}{4}^{10}$, $\frac{7}{8}^{9}$, 1^{8}, $1\frac{1}{8}^{7}$, $1\frac{1}{4}^{7}$, $1\frac{3}{8}^{6}$, $1\frac{1}{2}^{6}$, $1\frac{5}{8}5\frac{1}{2}$, $1\frac{3}{4}^{5}$, $1\frac{7}{8}^{5}$, $2\ 4\frac{1}{2}$	72.00

We furnish the above Plates with Machinists' Taper Hand Taps.

HAYES ADJUSTABLE PIPE DIES.

These Dies will fit any stock four or three inches square. It is sometimes necessary to allow the back plate of the stock to protrude in order to bind the die in place. Only the best tool steel is used in the small cutters and they are tempered better and more evenly than the larger cutters and solid dies. When the cutters are set against the back of the slot the die is exactly standard. By loosening the back plate the dies can be easily adjusted by screwing up the corner screws. The cutters can be easily removed from the block and sharpened. One block will do for any number of cutters, which can be purchased separately. In using die always have back plate tightened



Size—4 inches x 1 inch. Right and Left.

Inches	1	1¼	1½	2
Each	$3.50	3.50	3.50	3.50

"MANSFIELD" DIE HOLDERS.

No. 1, Holds 6 Round Dies, ⅛ in. diameter. $2.00

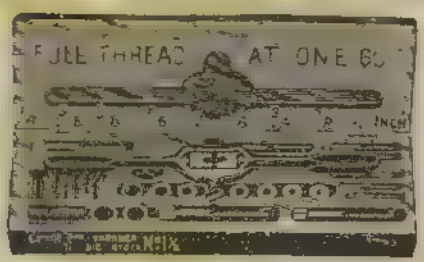
No. 2, Holds 6 Round Dies, 1⅛ in. diameter 2.25

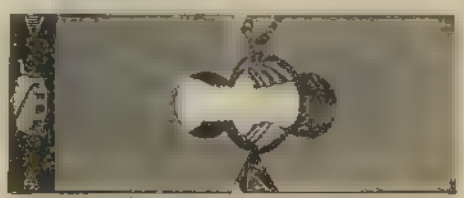
SOLID DIE HOLDERS.

Holding Round Solid and Round Adjustable Dies.

Length.	Outside Diameter of Die.	Price Each.	Length.	Outside Diameter of Die.	Price Each.
3½ inches.	⅛ inches.	$0.40	14 inches.	1⅛ inches.	$1.25
5 "	5/16 "	40	18 "	1 9/16 "	1 50
7 "	⅜ "	50	23 "	1⅝ "	1.50
10½ "	½ "	1 00	29 "	2¼ "	1.75

GARDNER SCREW PLATES.





(CUT FULL SIZE.)

Adjustable Die for Gardner Die Stock, showing Adjusting Screws.

Gardner Die Stock.

In these plates, the die is clamped between a hole hardened V's and backed up by hardened stops, so that it is really a solid die when at work. The adjusting screws on the outside of the plate, when properly changed, each will retain its proper adjustment until intentionally altered. The form of the handles will be found convenient to hold and may be hung up out of the way when not in use.

All the parts of these wearing are case-hardened. The guide bushings are of hardened steel and will out-wear twenty made in the ordinary way.

No. 1. Gardner Screw Plate, cutting ⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1 in., complete with stock, 19 in. long, 7 taps and hardened bushings.....Price, $16.00

No. 1½. Gardner Screw Plate, cutting ⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1 in., complete with stock, 19 in. long, 9 taps and hardened bushings.....Price, 22.00

No. 2. Gardner Screw Plate, cutting ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼ in., complete with stock, 28 in. long, 9 taps and hardened bushings.....Price, 27.00

No. 2½. Gardner Screw Plate, cutting ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½ in., complete with stock, 28 in. long, 11 taps and hardened bushings.....Price, 35.00

Prices of Extra Parts.

Nos. 1 and 1½. Stock, 19 in. long.....each, $3 50. Dies.....$1.30. Bushings.....25c.
" 2 and 2½. " 28 " ..... " 5.00 " ..... 1.60 " .....40c.

GUNSMITHS' SCREW PLATES.

Suitable for Nipples and all General Work done by Gunsmiths. Extra Quality.

Each.....$3.00

No. 0 DIE STOCK.

For Jewelers, Dentists, Tool-Makers, Amateurs.

The taps for use with this stock are made taper, plug, and bottoming in form, like hand taps with shanks squared to fit one solid Wrench. The dies are discs, 5/8 inch diam., 1/4 inch thick, split on one side, and for use are nicely adjusted by screws in steel collets, which have outside diameter of 5/8 inch, and are held in the stock by a thumb-screw. Shanks or extensions of the collets serve as guides for the dies and prevent the cutting of a thread nearer to the shoulder than 3/8 inch. Collets without the guide are furnished to order at same price, permitting threading to a shoulder. Taps and dies cut clean, full threads in one passage through a nut or over a rod. The regular set consists of one stock, one tap wrench, six each taps, dies and collets, and is furnished in wooden box at $6.75, in velvet lined case at $7.00, weight thirteen ounces. Weight of large case with eight dies and twenty four taps to the set, one pound, ten ounces. Six taps and dies of any of the following sizes will be furnished in the set. Extra taps, dies, etc., will be furnished at prices given below. For Whitworth standard thread only the following sizes will be furnished: 1/32-48, 1/16-40, 3/32-32, 1/8-24, 5/32-24, 1/4-20. In U. S. standard thread, the sizes corresponding to the sellers formula, viz.: 1/16-64, 3/32-48, 1/8-40, 5/32-36, 3/16-32, 7/32-28, 1/4-20 and the following diameters and pitches will be furnished: 1/16, 60; 3/32, 48, 50, 60; 1/8, 44, 48; 5/32, 32, 40; 7/32, 22, 24, 36; 3/16, 24, 32, 36; 1/4, 18, 22, 24, 26; 5/16, 56, 60, 64, 40, 44, 48; 3/8, 32, 36, 40; 7/16, 32, 36, 40; 1/2, 24, 28, 32, 36; 9/16, 24, 28, 32, 36; 5/8, 18, 20, 24, 26, 32; also machine screw sizes from Nos. 2 to 14 inclusive of all pitches found in the list of machine screw taps. When these taps are wanted with No. 0 stock, it should be so mentioned, that those with shanks squared to fit the wrench may be furnished.

	Wght. oz.	Each.		Wght. oz.	Each.
Stock 5/8 in. long, with thumb screw	2	$0.85	Taps either taper, plug or bottoming		$0.38
Thumb screw for stock		.10	Wooden box	6	.50
Screws for collets		.03	Case, velvet-lined for regular set	5	.75
Collet, including screws	1/2	.40	Case, velvet-lined (for 8 dies and 24 taps)	12	1.00
Die 1/4 inch thick by 5/8 inch diameter	1/2	.25			

Taps with left-hand thread of any pitch, and with right-hand thread of any pitch not included in the sets given above, will be furnished at 50 cents each.

Dies with left-hand thread of sizes for which we have hobs will be furnished at 75 cents each.

Dies with right or left hand thread for which hobs must be made will be furnished at $1.75 each for a single one, and at 75 cents each for additional dies. When this style die is ordered for use in a screw machine it should be so stated.

GRANT'S DIE STOCK AND DIES.

The die stock herewith represented is made in four sizes, Nos. 1, 2, 3 and 4. It is forged in one piece, from good quality wrought-iron, finished and case hardened. It is strong, well proportioned, and light. The dies cut very fast and easily, and should be passed once over the bolt without turning back, until the desired length of thread has been cut. One die can be quickly substituted for another in the stock without a wrench. Machinist hand taper taps, furnished with die stocks, are designed to pass once through nuts without backing out, cutting clean, full threads in the operation. The taps and dies for use in the United States have the U. S. standard right hand thread. Foreign orders are filled with U. S. or without thread. A neat wooden box is furnished with each.

No. 1 die-stock, length 13 inches, is furnished with five dies and taper taps for cutting the following sizes and number of threads: 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13. Weight, 4 pounds, 5 ounces. With taper tap, $15.30; with taper and plug taps, $17.36; with taper, plug and bottoming taps, $19.42. 1/8-28 die and tap will be furnished for this stock at $2.88.

No. 2, length 20½ inches, is furnished with six taps and dies; sizes and threads as follows: 5/16-18, 3/8-16, 7/16-14, 1/2-13, 9/16-12, 3/4-10. Weight, 14 pounds. With taper tap, $22.50; with taper and plug taps, $25.35; with taper, plug and bottoming taps, $28.70. 1/4-20, 5/16-18, 1/2-11, dies will be furnished for this stock at $3.00 each, and dies for pipe 1/8, 1/4, 3/8 and 1/2 inches at $3.00 each.

No. 3, length 30 inches, is furnished with five taps and dies; sizes and threads as follows: 1/2-13, 5/8-11, 3/4-10, 7/8-9, 1-8. Weight, 30 pounds. With taper tap, $27.00; with taper and plug taps, $31.80; with taper, plug and bottoming taps, $36.60. 3/8-16, 7/16-14, 9/16-12, 1/2-11, 1/2-13, and 1 5/8-9 dies will be furnished for this stock at $3.70 each.

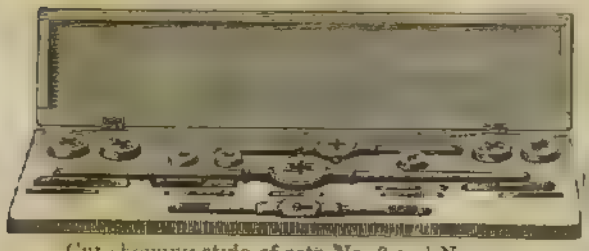
No. 4, length 48 inches, is furnished with six taps and dies; sizes and threads as follows: 7/8-9, 1-8, 1 1/8-7, 1 1/4-7, 1 3/8-6, 1 1/2-6. Weight, 92 pounds. With taper tap, $50.40; with taper and plug taps, $61.65; with taper, plug and bottoming taps, $72.90. 3/4-10, 1 1/8-10, 1 1/2-9, 1 1/16-8, 1 5/8-7, 1 3/4-5, 1 3/4-6, dies will be furnished for this stock at $5.00 each, and dies for pipe 3/4, 1 and 1 1/4 inch at $5.00 each.

"LITTLE GIANT" SCREW PLATES.

Cut showing style of sets Nos. A1, A2, and A3.

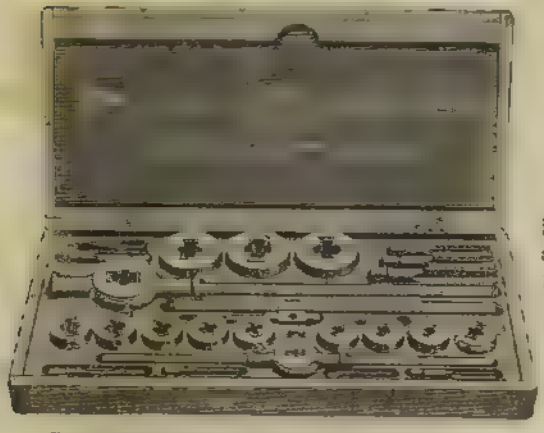
Sectional view of Die and Collet.

Cut showing style of sets from No. 1 to No 7.



Cut showing style of sets No. 8 and No. 9.

Cut showing style of sets No. 20, No. 25 and No. 30.

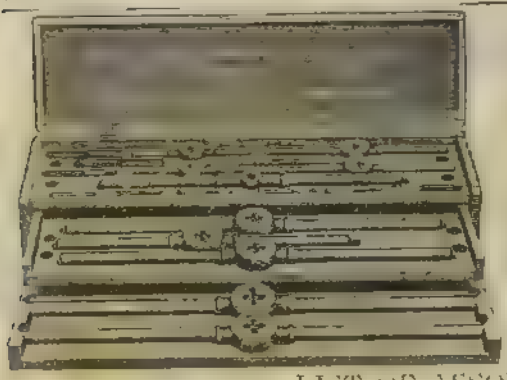


Cut showing style of sets No. 40 and No. 50.

Each assortment is put up in a neat wood case, as shown in cuts, and *all* are provided with *Tap Wrenches* up to and including 1 inch. For wrenches for taps larger than 1 inch, see list of Tap Wrenches.

PRICE LIST.

No. A1	has	Stock	7½	inches	long,	Cuts 1/16, 5/64, 3/32, 7/64, ¼	$ 6.50
No. A2	"	"	7½	"	"	" 7/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16, 13/64, 7/32, 15/64, ¼	8.00
No. A3	"	"	7½	"	"	" 5/64, 1/16, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16, 13/64, 7/32, 15/64, ¼	10.50
No. 1	"	"	14½	"	"	" 1/4, 5/16, 3/8, 7/16, ½	12.00
No. 2	"	"	23	"	"	" 1/4, 3/8, 1/2, 5/8, 3/4	13.50
No. 3	"	"	26	"	"	" 5/8, 3/4, 7/8, 1 inch	15.00
No. 4	"	"	26	"	"	" ½, 5/8, ¾, 7/8, 1 inch	17.50
No. 5	"	"	23	"	"	" 1/4, 5/16, 3/8, 7/16, ½, 5/8, ¾	16.00
No. 5½	"	"	23	"	"	" 1/4, 5/16, 3/8, 7/16, ½, 9/16, 5/8, ¾	18.50
No. 6	"	"	26	"	"	" 7/8, 1 inch, ½, 5/8, ¾, 7/8, 1 inch	22.00
No. 7	"	"	26	"	"	" 1/4, 5/16, 3/8, 7/16, ½, 5/8, ¾, 7/8, 1 inch	25.50
No. 8	"	"	14½	"	"	for first four sizes, and 26-inch Stock for the larger sizes. Cuts 1/4, 5/16, 3/8, 7/16, ½, 5/8, ¾	18.00
No. 9	"	"	14½	"	"	for first four sizes, and 29-inch Stock for the larger sizes. Cuts 1/4, 5/16, 3/8, 7/16, ½, 5/8, ¾, 7/8, 1 inch	27.50
No. 20	"	"	40	"	"	Cuts 5/8, ¾, 7/8, 1, 1 1/8, 1¼ inches	35.00
No. 25	"	"	52	"	"	" 7/8, 1, 1 1/8, 1¼, 1 3/8, 1½ inches	45.00
No. 30	"	"	52	"	"	" 1 1/8, 1¼, 1 3/8, 1½ inches	37.50
No. 40	"	"	23	"	"	for first seven sizes, 40-inch Stock for the larger sizes Cuts 1/4, 5/16, 3/8, 7/16, ½, 5/8, ¾, 7/8, 1, 1 1/8, 1¼ inches	40.00
No. 50	"	"	26	"	"	for first nine sizes, 52-inch Stock for the larger sizes. Cuts 1/4, 5/16, 3/8, 7/16, ½, 5/8, ¾, 7/8, 1, 1 1/8, 1¼, 1 3/8, 1½ ins.	60.00



LITTLE GIANT FULL-STOCKED SCREW PLATES.

A Stock for Each Die.

Each of the following assortments is put up in a neat wood case, and contains an Adjustable Tap Wrench suitable for holding taps for each assortment.

LIST OF ASSORTMENTS AND PRICES

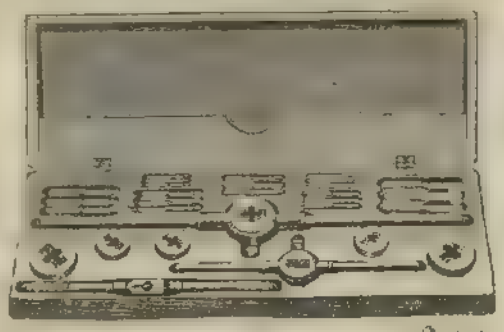
No. 61.	Cutting [illegible]	$12 00
" 62	" [illegible]	15.50
" 63	" [illegible]	18.00
" [illegible]	" [illegible]	20.50
" 66.	" [illegible]	24.00
" 67	" [illegible]	29 50
" 640.	" [illegible]	47.00
" 650	" [illegible]	67.00

Numbers 67, 640 and 650 plates have two tap wrenches. These plates are put up (unless otherwise ordered) with V form of thread, *rough iron sizes*. We also furnish United States Standard or Whitworth forms of thread, if desired, at same list price. Plates of these forms of thread are always sent exact size, unless otherwise ordered.

PRICE LIST OF PARTS.

Size	Die	Guide	Stock	Tap	Size	Die	Guide	Stock	Tap
[illegible]	$1 00	$0 20	$0 5[illegible]	$0 35	¾	$2 00	$0 20	$0 75	$1 20
[illegible]4	1 00	20	50	45	1⅛	2 00	20	1 00	1 40
[illegible]⅜	1 00	20	50	50	⅞	2 75	20	1 00	1 60
[illegible]	1 25	20	50	55	1⅛	2 75	20	1 00	1 80
[illegible]	1 25	20	[illegible]5	60	1	2 75	20	1 00	2 00
[illegible]	1 50	20	75	70	1⅛	4 00	50	1 75	2 25
[illegible]	1 50	20	75	80	1¼	4 00	50	1 75	2 60
[illegible]	1 75	20	75	90	1⅜	5 00	50	2 25	3 00
[illegible]	[illegible] 7[illegible]	20	75	1 05	1½	5 00	50	2 25	3 50

Left-hand threads are furnished at above list prices. Particular attention is called to the guide; this, being removable, can be replaced at a very low cost, and save the expense of purchasing an entire new stock. The principle of the die and stock is the same as used in our single stock plate. To adjust, simply turn screws in or out, as the adjustment desired requires. V form, rough iron sizes are sent unless otherwise ordered. U. S. S or Whitworth forms furnished at same list prices.



LITTLE GIANT SCREW PLATES.

Machinists' Sets, with Taper, Plug and Bottoming Taps.

Unless otherwise ordered, V form of thread, *exact sizes*, will be sent. U. S. S. or Whitworth forms of thread furnished at same prices, if desired; also rough iron sizes, when ordered.

Assortment No. 101.	Cutting ¼, [illegible]	$15.50
Assortment No. 105.	Cutting ¼, [illegible]	22 00
Assortment No. 106.	Cutting [illegible]	31 25
Assortment No. 107.	Cutting ¼, [illegible]	38 00
Assortment No. 108.	Cutting ¼, [illegible]	2[illegible] 00
Assortment No. 109.	Cutting ¼, [illegible]	38 00

All these assortments with Adjustable Tap Wrench.

Assortment No. 150.	Cutting ¼, [illegible]	84 00

With Adjustable Tap Wrenches, holding Taps to 1 inch.

ARMSTRONG'S ADJUSTABLE STOCKS AND DIES FOR THREADING PIPE.

	EACH.
No. 1 Stock with 4 Right Hand Dies, ⅛, ¼, ⅜ and ½ in	$9 00
No. 1 Stock with 4 Right and Left Hand Dies, ⅛, ¼, ⅜ and ½ in	14.00
No. 2 Stock with 5 Right Hand Dies, ¼, ⅜, ½, ¾ and 1 in	12.00
No. 2 Stock with 6 Right Hand Dies, ⅛, ¼, ⅜, ½, ¾ and 1 in	14.00
No. 2 Stock with 5 Right and Left Hand Dies, ¼, ⅜, ½, ¾ and 1 in	20.00
No. 2 Stock with 6 Right and Left Hand Dies, ⅛, ¼, ⅜, ½, ¾ and 1 in	22.75
No. 2½ Stock with 4 Right Hand Dies, ½, ¾, 1 and 1¼ in	12.00
No. 2½ Stock with 4 Right and Left Hand Dies, ½, ¾, 1 and 1¼ in	18.00
No. 3 Stock with 3 Right Hand Dies, 1¼, 1½ and 2 in	20.00
No. 3 Stock with 4 Right Hand Dies, 1, 1¼, 1½ and 2 in	24.00
No. 3 Stock with 5 Right Hand Dies, ¾, 1, 1¼, 1½ and 2 in	28.50
No. 3 Stock with 3 Right and Left Hand Dies, 1¼, 1½ and 2 in	32.00
No. 3 Stock with 4 Right and Left Hand Dies, 1, 1¼, 1½ and 2 in	40.00
No. 3 Stock with 5 Right and Left Hand Dies, ¾, 1, 1¼, 1½ and 2 in	48.50

The charge from 2½ to 3 in. is made by simply reversing the Dies and fitting in No. 6 Stock.

No. 6 Stock, cutting 2½ and 3 in. Right Hand	40 00
No. 6 Stock, cutting 2½ and 3 in Right and Left Hand	55 00

Dies for No. 7 Stock come in four pieces, each piece being double ended. We can furnish them threaded, 2½ and 3 in., 3½ and 4 in.

No. 7 Stock, cutting 2½, 3, 3½ and 4 in. Right Hand.	60.00
No. 7 Stock, cutting 2½ and 3 in. Right Hand	45.00
No. 7 Stock, cutting 3½ and 4 in. Right Hand.	45 00
No. 7 Stock, cutting 2½, 3, 3½ and 4 in Right and Left Hand	92 00
No. 7 Stock, cutting 2½ and 3, or 3½ and 4 in. Right and Left Hand	60 00

ARMSTRONG'S ADJUSTABLE STOCKS AND DIES FOR THREADING BRASS PIPE.

No. 2 Stock, 5 Brass Dies, ⅜, ½, ¾, 1 and 1¼ inch ..... each, $15.00

No. 2 Stock, 5 Brass Dies, and Taps, ⅜, ½, ¾, 1 and 1¼ inch ..... each, 26.25

ARMSTRONG'S BRASS OR FINE THREAD TAPS, RIGHT OR LEFT HAND.

Diameter, inches	⅜	½	¾	1	1¼
No. of Threads to inch	20	20	18	18	18
Each	$1.25	1.75	2.25	2.75	3.25

Never buy any Tools or Supplies until you have a written estimate from Montgomery & Co. They are always the cheapest, quality considered.

ARMSTRONG'S ADJUSTABLE STOCKS AND DIES FOR THREADING BOLTS.

No. 1 Stock, 7 Bolt Dies, ¼, 5/16, ⅜, 7/16, ½, ⅝ and ¾ in. without Taps, each .. $15 00

No. 1 Stock, 7 Bolt Dies and 7 Taps, ¼ to ½ in., each 20.00

No. 2 Stock, 7 Bolt Dies, ¼, ⅜, ½, ⅝, 1, 1⅛ and 1¼ in. without Taps, each 20.00

No. 2 Stock, 7 Bolt Dies with Taps, ¼ to 1¼ in., each 30.00

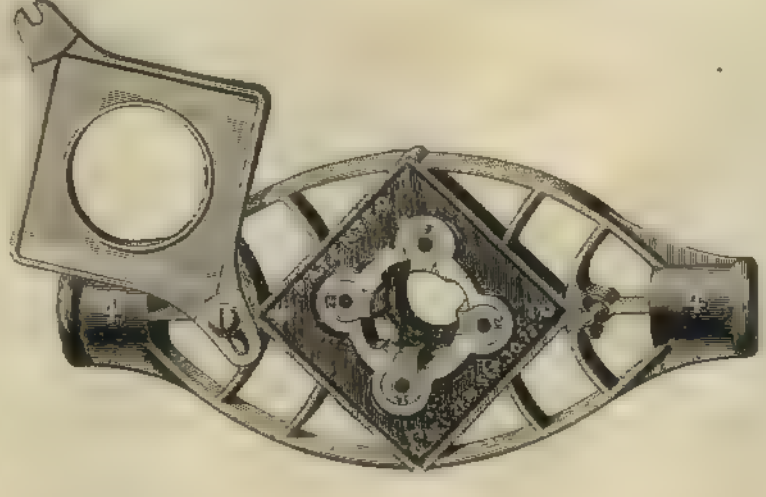
PARTS FOR ARMSTRONG'S ADJUSTABLE STOCKS AND DIES.

	EACH.
No. 1 Stock, taking Pipe Dies ⅛ to ½ in. and Bolt Dies ¼ to ¾ in.	$3 25
No. 2 Stock, taking Pipe Dies ¼ to 1 in.; Brass Pipe Dies, ¼ to 1½ in. and Bolt Dies ¼ to 1¼ in.	4 00
No. 2½ Stock, taking Pipe Dies ¼ to 1¼ in.	4.50
No. 3 Stock, taking Pipe Dies ¼ to 2 in.	7.00
No. 6 Stock, taking Pipe Dies 2½ and 3 in.	25.00
No. 7 Stock, taking Pipe Dies 2½ to 4 in.	30 00
No. 1 Dies, for Pipe ⅛, ¼, ⅜ in. either right or left	1.25
No. 2 Dies, for Pipe ⅛, ¼, ⅜, ½, ¾, 1 in. either right or left	1 50
No. 2 Dies, for Brass Pipe ⅛, ¼, ⅜, ½, 1, 1¼ in. either right or left	2.00
No. 2½ Dies, for Pipe Double Ends ½ and ¾, or 1 and 1¼ in. either right or left	3.25
No. 3 Dies, for Pipe ¾, 1, 1¼, 1½, 2 in. either right or left	4.00
No. 6 Dies, for Pipe Double ends 2½ and 3 in. right or left	15 00
No. 7 Dies, for Pipe Double ends 2½ and 3, or 3½ and 4 in.	
No. 1 Dies, for Bolts ¼, 5/16, ⅜, 7/16 in. right or left hand	1 50
No. 1 Dies, for Bolts ½, ⅝, ¾ in. right or left hand	1 75
No. 2 Dies, for Bolts ¼, ⅜, ½, ⅝, 1 in. right or left hand	2 00
No. 2 Dies, for Bolts 1¼, 1½ in. right or left hand	2.25

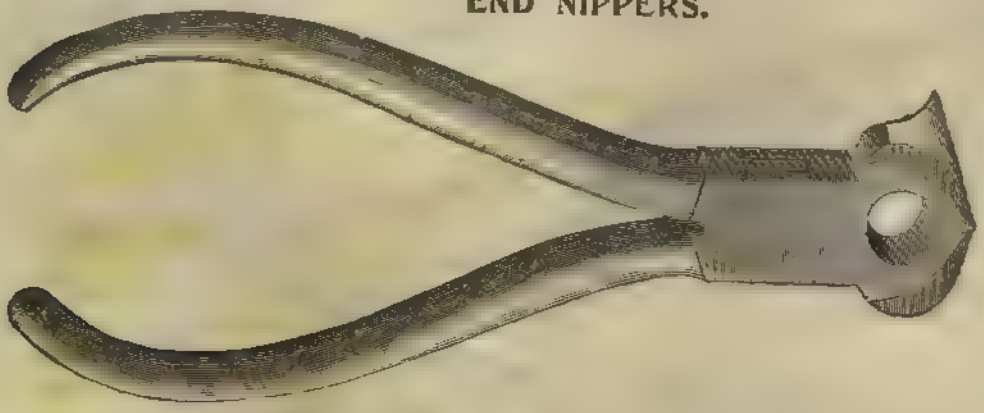
Bushings for Stocks.... No.	1,	2,	2½,	3,	6,	7
Price each	20,	25,	40,	50,	$1.00,	1.50.

ARMSTRONG'S SECTIONAL STOCK, No. 4, AND DIES FOR PIPE.

	EACH.
No. 4 Stock, 3 Dies, 1¼ to 2 inch	$18.00
" 4 Stock, 3 Right and 3 Left Dies, 1¼ to 2 in.	27.00
" 4 Stock, 4 Dies, 1 to 2 inch	21.00
" 4 Stock, 4 Right and 4 Left Dies, 1 to 2	33.00
" 4 Stock only	7.50
" Blocks with Cutters Right or Left.	3.00
" 4 Bushings	.50
Cutters, right or left	.50



END NIPPERS.

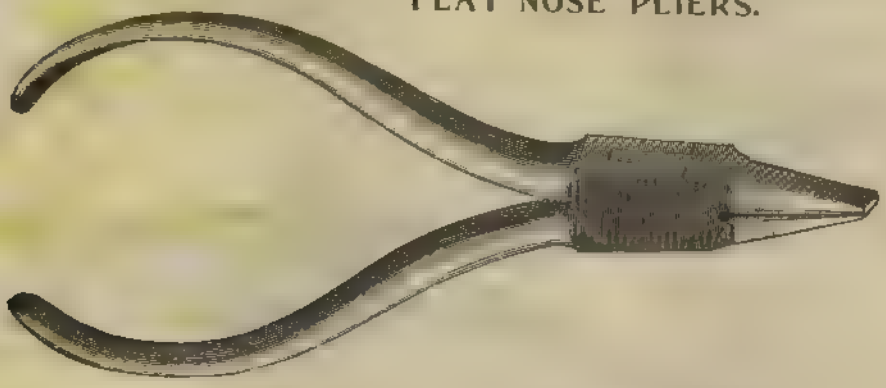


Every German Nipper Warranted.

	GERMAN.	STUBS
5 in. and under....	$6.40	$10 50 per doz.
5½ "	7 10	11.50 " "
6 "	7.80	14.00 " "

	GERMAN.	STUBS
6½ inches.... ..	$9.80	$16.50 per doz.
7 "	11.25	19.00 " "
8 "	14.80	25 00 " "

FLAT NOSE PLIERS.



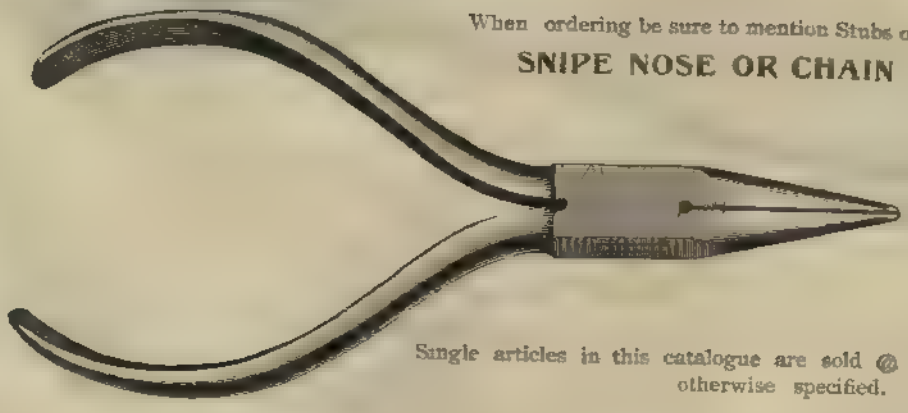
Same prices as Round Nose.

ROUND NOSE PLIERS.

LENGTH.	GERMAN Per doz.	STUBS. Per doz.
3 to 4½ in.	$3.60	$5.50
5 "	4.00	6.00
5½ "	4 75	7.00
6 "	5.50	9.00
6½ "	7.00	12.00
7 "	8.40	14.00
8 "	10.00	20.00

When ordering be sure to mention Stubs or German make.

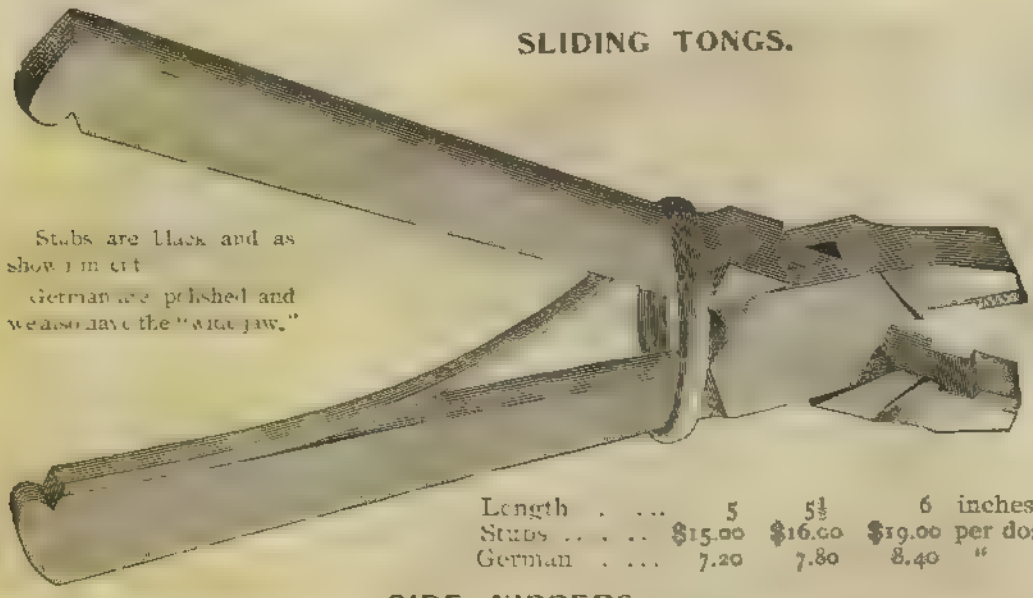
SNIPE NOSE OR CHAIN PLIERS.



LENGTH.	GERMAN. Per doz.	STUBS. Per doz.
4 inches,	$3.80	$5.50
4½ "	3.80	5.50
5 "	4.20	6.00
6 "	5 80	9.00

Single articles in this catalogue are sold @ ⅓ dozen prices unless otherwise specified.

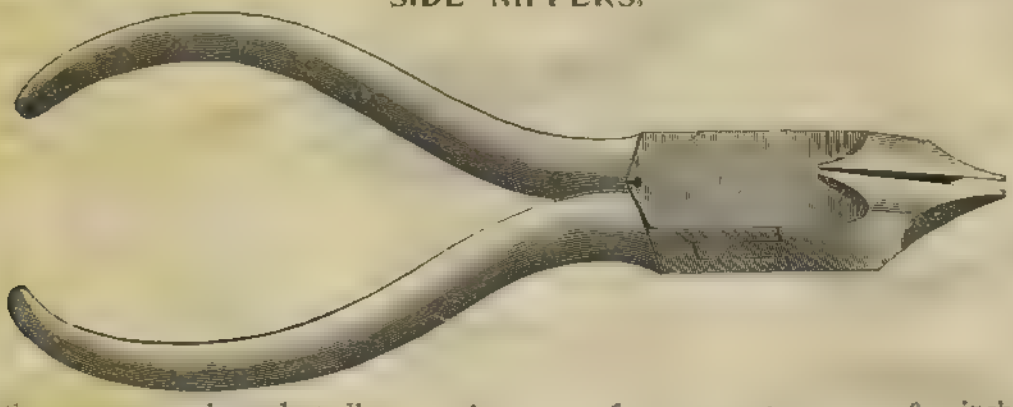
SLIDING TONGS.



Stubs are black and as shown in cut.
German are polished and we also have the "wire jaw."

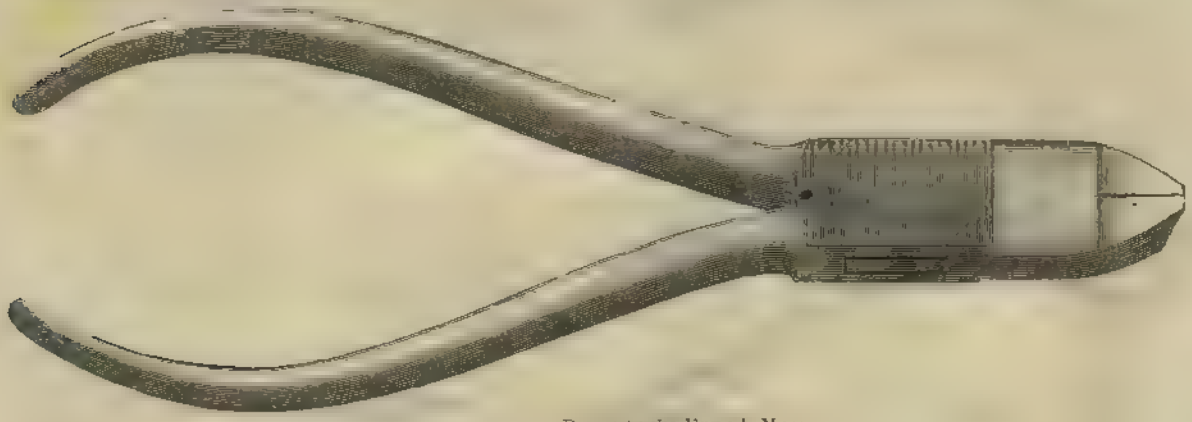
Length	5	5½	6	inches.
Stubs	$15.00	$16.00	$19.00	per dozen.
German	7.20	7.80	8.40	" "

SIDE NIPPERS.



Length	5 in. and smaller,	5½	6	7	8	inches.
Stubs	$10.50	$11.50	$14.00	$19.00	$25.00	per dozen.
German	7.50	8.40	9.50	12.00	15.80	" "

TELEGRAPH OR SIDE CUTTING PLIERS OR BELL PLIERS.



Prices Stubs English Make

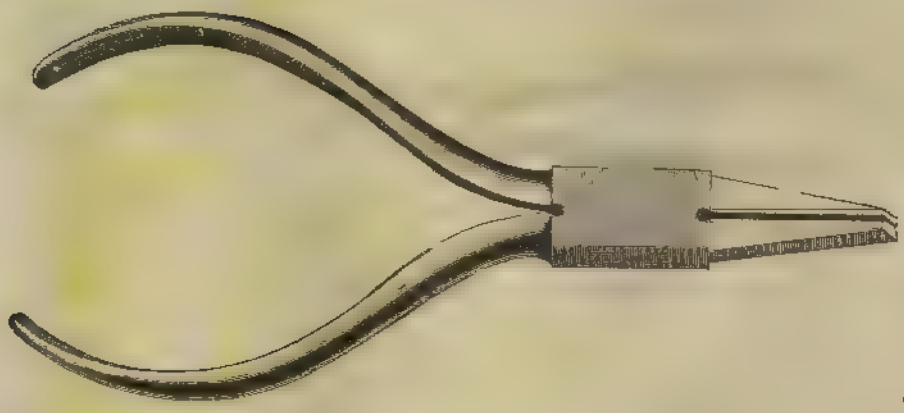
Length	5½ and under,	6	6½	7	8	9	inches.
No. 153	$10.00	$11.00	$14.00	$18.00	$24.00	$30.00	per dozen.
No. 152	11.50	12.50	16.00	18.00	24.00		" "

No. 152 is similar to No. 153 with the exception of having raised Cutters.

GERMAN, ALL STEEL, EXTRA FINE QUALITY.

5 and under	5½	6	6½	7	8	inches.
$6.50	$7.40	$8.60	$9.40	$11.25	$14.00	per dozen.

HALF ROUND PLIERS.



Stubs.

Length.	Per doz.
3 to 4½ in..	$5 50
5 " ..	6.00
5½ "	7 00
6 "	9.00

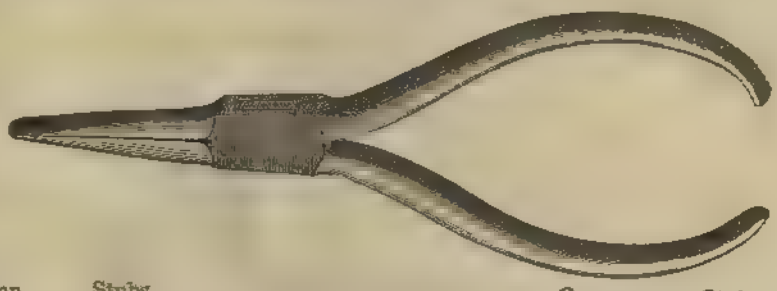
German.

Length.	Per doz
4 in.	$4 00
4½ "	4 00
5 "	4 80
5½ "	5.60
6 "	6.20

STOCKINGER OR WEAVERS' PLIERS.

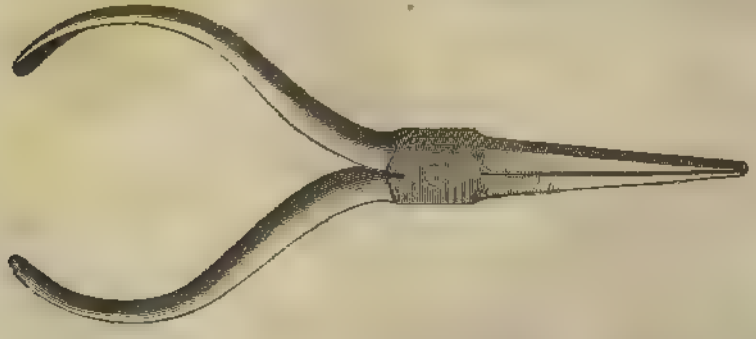
Our Stubs Pattern German Pliers and Nippers are made from very best English cast steel. They are strong and every pair warranted

Smooth Jaws, suitable for reed organ makers and knitting mills.



	German.	Stubs.
4 inches.... ....per doz	$3.80	$5.50
4½ " ..... "	3.80	5.50
5 " ..... "	4.20	6.00
5½ inches.....per doz.	$4.80	$7.00
6 " ..... "	5.80	9.00

PENDULUM PLIERS.



These Pliers, on account of their extreme length and narrow jaws, are very acceptable for getting into difficult and narrow recesses

	German.	Stubs.
3 to 4½ in. per doz.	$3.80	$5.50
5 inches "	4.20	6.00
5 " "	4.80	7.00
6 " "	5.80	9.00

Long round nose pliers same price.

STUBS' EXTRA FINE POCKET GAS PLIERS.

Length, 4½ inches.....per doz. $8.00 | Length, 6 inches.....per doz. $12.50

CUTTING PINCERS.

	German.	Stubs.
5 inches. .....per doz.	$3 20	$7.50
6 " ..... "	4.00	9.00
7 " ..... "	5.00	10.50
8 " ..... "	5.80	12.00
9 " ..... "	8.20	15-75
10 " ..... "	9.60	17.50
12 " ..... "		27.00

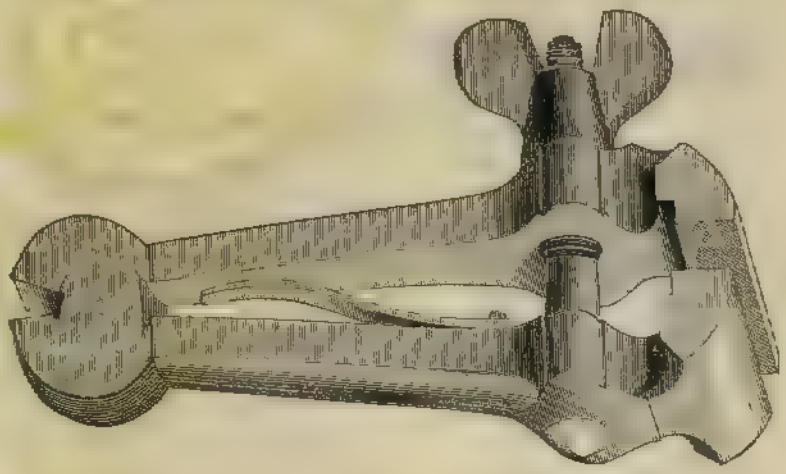
German Pincers are not really choice—and we can't warrant them as A No. 1 tools.

HAND SHEARS.

We keep three kinds of Hand Shears or Snips, the Stubs, German, and "Genuine Brown." The Stubs and German are "black finish," whereas the Browns are bright finish. The latter are greatly in demand by the jewelers. We also have the Stubs Shears, both right and left hand.

	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.	
Stubs	$7.50	$9.00	$10.50	$12.00	$15.75	$17.50	$27.00	Per Dozen.
German		8.00	10.00	11.25		13.80		" "
Browns	10.40	10 40	12.00	14.00	15.50	17.00	20.60	" "

HAND VISES.



Size,	German, Per Doz.	Stubs, Per Doz.
3 inches	$9.00	$12.00
3½ "	9.00	13.00
4 "	9.00	14.00
4½ "	9.00	16 00
5 "	11.00	20.00
5½ "	13.60	24.00
6 "	16.60	34.00

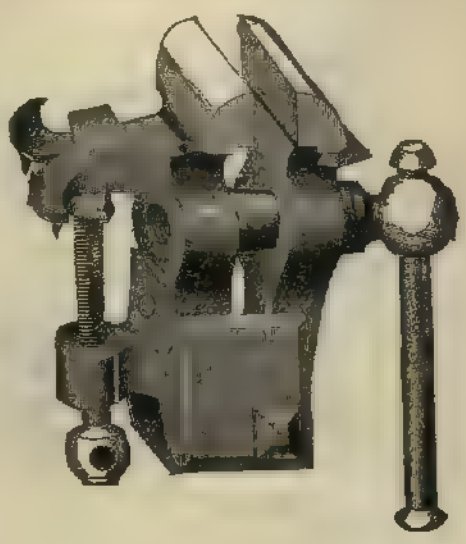
Stubs, with loops for linemen, $4 00 per doz extra

With straps for linemen, $12.00 per doz. extra.

German, with loops for linemen, best quality, 5½ in., $20.00 per doz. 6 in., $25 00 per doz.

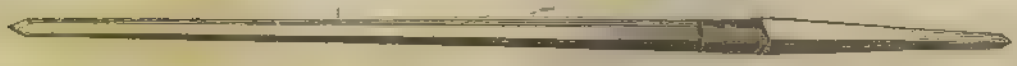
STUBS BENCH VISES.

Weight.	Each.
1 lb.	$3.17
1 " 2 oz	3.30
1 " 3 "	3.36
1 " 4 "	3.42
1 " 5 "	3.48
1 " 8 "	3.67
1 " 9 "	3.75
1 " 11 "	3 92
1 " 12 "	4.00
1 " 13 "	4.07
1 " 14 "	4.13
1 " 15 "	4.19
2 "	4.25
2 " 1 "	4.32



Weight.	Each.
2 lb. 2 oz	$4.38
2 " 3 "	4.44
2 " 4 "	4.50
2 " 6 "	4.59
2 " 7 "	4 63
2 " 8 "	4.67
2 " 9 "	4.71
2 " 10 "	4.75
2 " 11 "	4.80
2 " 12 "	4.84
3 "	5.00
3 " 4 "	5.17
3 " 8 "	5.33

STUBS' No. 19. BROACHES.

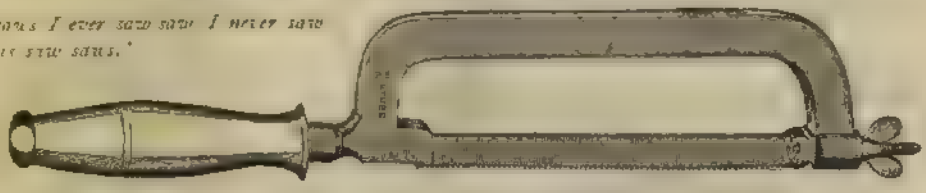


Length of cutting part,	8	7	6½	6	5½	5	4¾	4½	4¼	4 inches.
Size of largest part.	1/8	7/64	3/16	11/64	5/32	9/64	1/4	7/32	11/64	3/16
Per dozen.....	$8.00	6.00	5.00	4.50	4.00	3.25	3.00	2.75	2.50	2.25

Size of largest part by Stubs' Dr. Rod Gauge,	15	20	25	30	35	40	45	50	53	55	smaller to pivot.
Per dozen.....	$1.03	1.38	1.38	1.13	1.00	.92	.84	.75	.75	.75	.67

STUBS' No. 167 A. HACK SAWS.

"Of all the saws I ever saw saw I never saw a saw saw a saw like this saw saws."



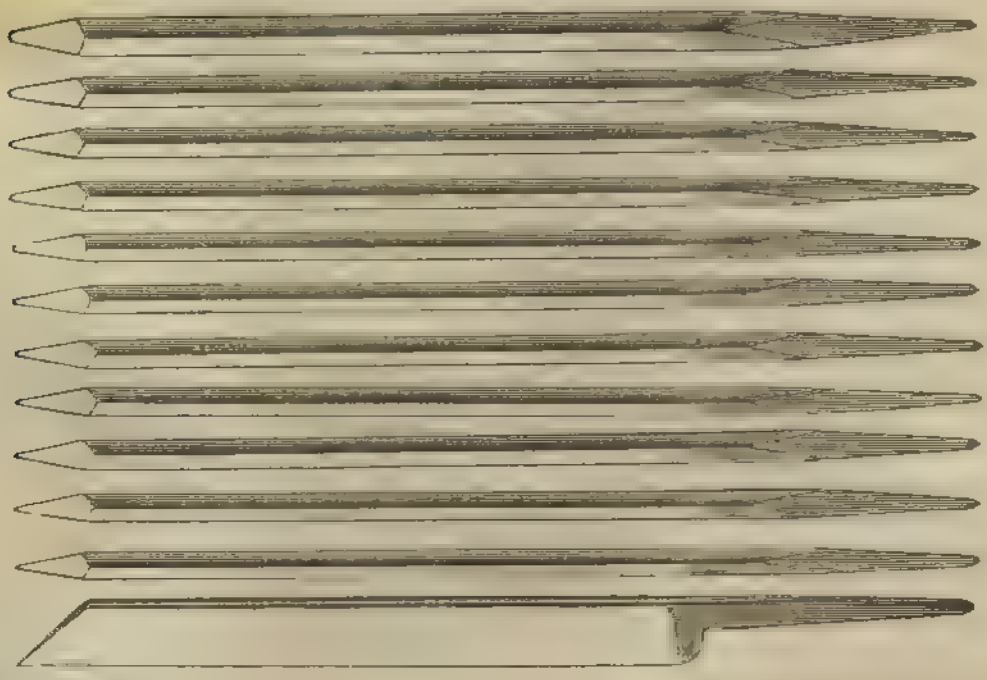
Length of Blade, 3	in.	per doz	$12.00	Length of Blade, 7	in.	per doz.	$24.00
" " 3½	"	"	13.50	" " 8	"	"	27.00
" " 4	"	"	15.00	" " 10	"	"	33.00
" " 5	"	"	18.00	" " 12	"	"	39.00
" " 6	"	"	21.00				

STUBS' No. 170. HACK SAW BLADES.

Length from hole to hole,	3	3½	4	5	6	7	8 inches.
Per dozen.....	$1.50	1.50	1.50	1.75	2.00	2.50	3.00

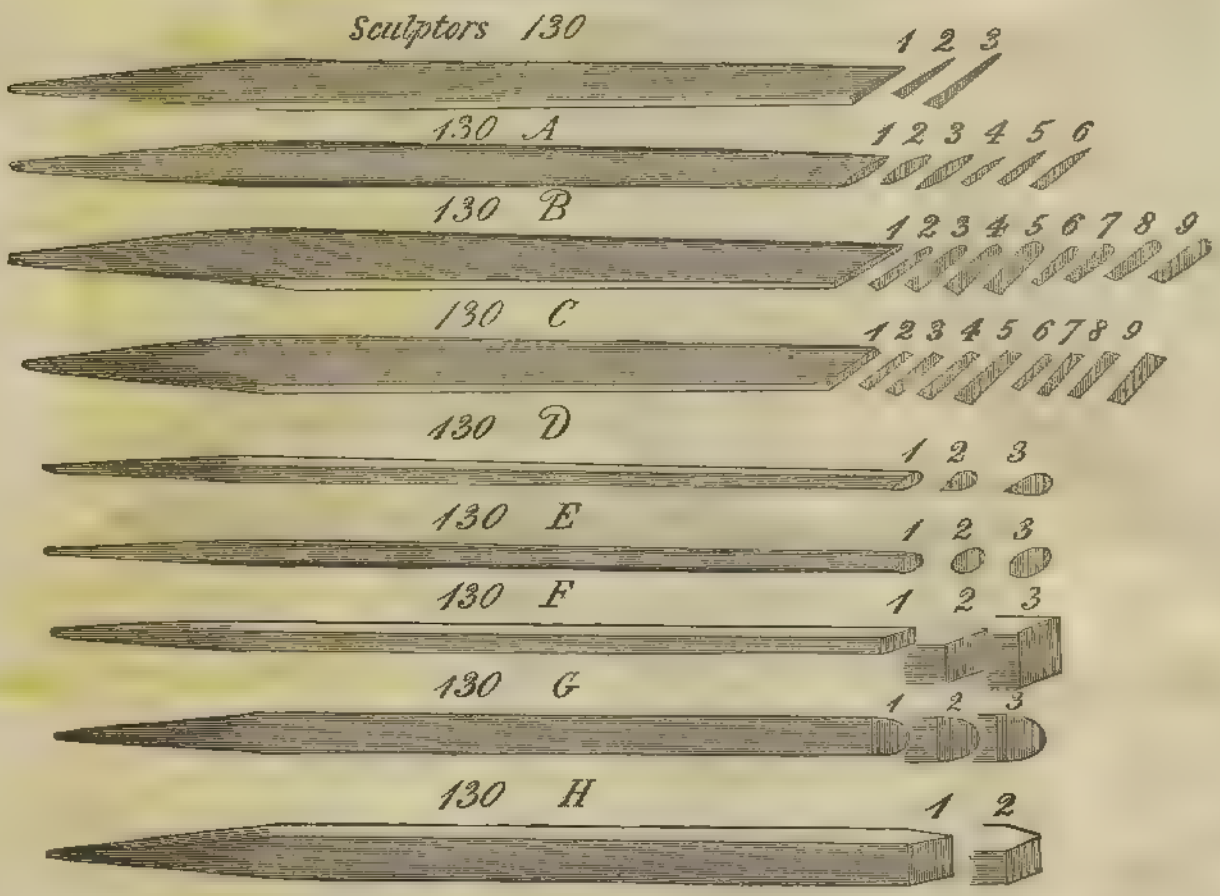
Length from hole to hole,	9	10	11	12	13	14	16 inches.
Per dozen.....	$3.50	4.00	4.50	5.00	5.50	6.00	8.00

STUBS' TINT TOOLS.



For Wood Engraving.....per doz. $1.25

STUBS' GRAVERS.



The above exact illustrations of Stubs' Engravers' Tools are shown to assist in ordering the proper tools suited best for the different styles of work.

STUBS' ENGRAVERS' TOOLS.

No. 130. Knife.

No. 1	per doz.	$0.92
" 2	"	1.00
" 3	"	1.09

No. 130 A.

1 to 3 OVAL. 4 to 6 ONGLETTE.

No. 1	per doz.	$0.92
" 2	"	1.00
" 3	"	1.09
" 4	"	.92
" 5	"	1.00
" 6	"	1.09

No. 130 B.

ROUND EDGE, 1 to 5, WIDE BACK.

No. 1	per doz.	$0.92
" 2	"	.92
" 3	"	1.00
" 4	"	1.09
" 5	"	1.17

No. 130 B.

ROUND EDGE, 6 to 9, NARROW BACK.

No. 6	per doz.	$0.92
" 7	"	1.00
" 8	"	1.09
" 9	"	1.17

No. 130 C.

FLAT EDGE, 1 to 5, WIDE BACK.

No. 1	per doz.	$0.92
" 2	"	.92
" 3	"	1.00
" 4	"	1.09
" 5	"	1.17

FLAT EDGE, 6 to 9, NARROW BACK.

No 6	per doz.	$0.92
" 7	"	1.00
" 8	"	1.09
" 9	"	1.17

No. 130 D.

ROUND EDGE, POINTED BACK.

No. 1	per doz.	$0.92
" 2	"	1.09
" 3	"	1.17

No. 130 E.

ROUND.

No. 1	per doz.	$0.92
" 2	"	1.09
" 3	"	1.17

No. 130 F.

CHISEL.

No. 1	per doz.	$0.92
" 2	"	1.09
" 3	"	1.17

No. 130 G.

½ ROUND, FLAT BACK.

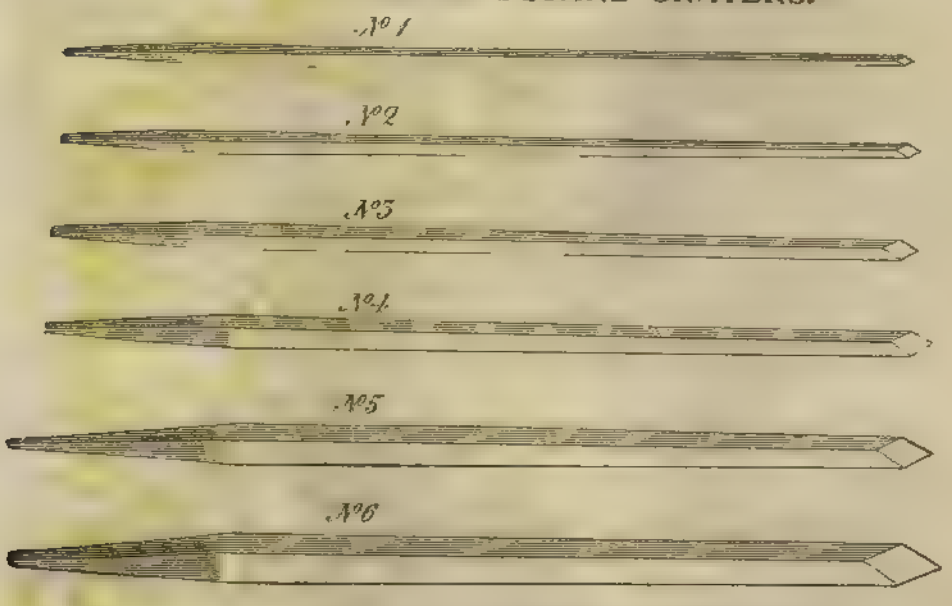
No. 1	per doz.	$0.92
" 2	"	1.09
" 3	"	1.25

No. 130 H.

FLAT BEVELED, CUTTING POINT.

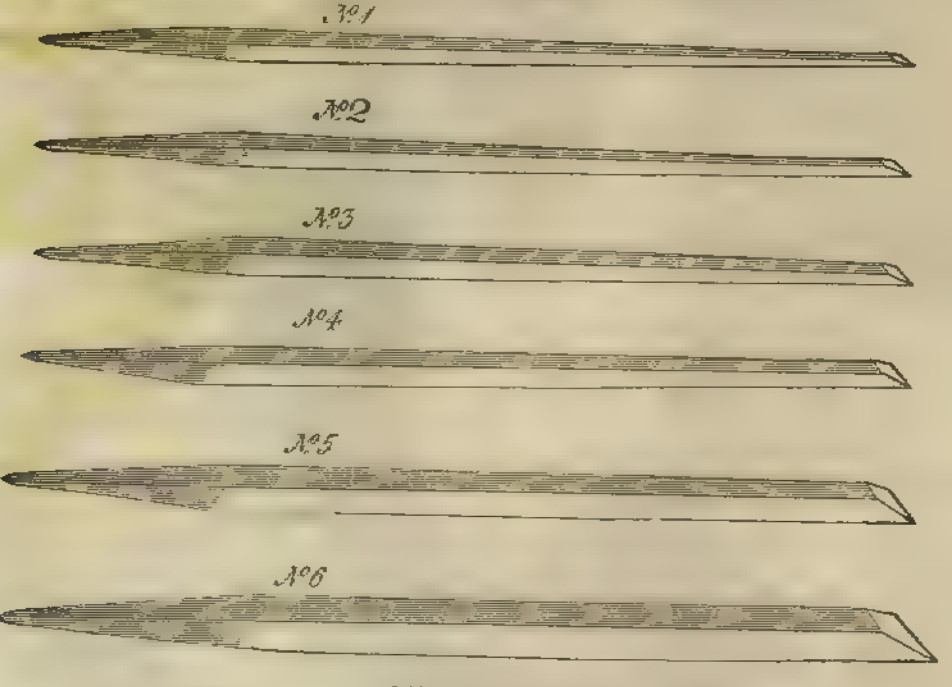
No. 1	per doz.	$1.09
" 2	"	1.95

No. 196. SQUARE GRAVERS.



No.	Size	Per Doz.
1	$\frac{5}{32}$	$0.75
2	$\frac{7}{32}$	.75
3	$\frac{9}{32}$	.84
4	$\frac{3}{16}$	.92
5	$\frac{7}{32}$	1.09
6	$\frac{1}{4}$	1.17
	$\frac{5}{16}$	1.75
	$\frac{3}{8}$	2.25

No. 198. LOZENGE GRAVERS.



	Per Doz.
No. 1	$0.75
" 2	.84
" 3	.92
" 4	1.00
" 5	1.09
" 6	1.17

STEEL PINION WIRE.

One-Foot Lengths.

6, 7, 8, 10, 12, and 16 leaf.

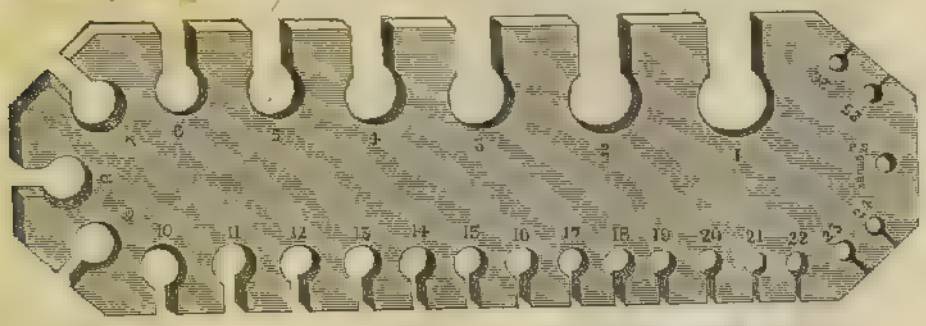
Sized by Stubs' drill rod and alphabet gauges.

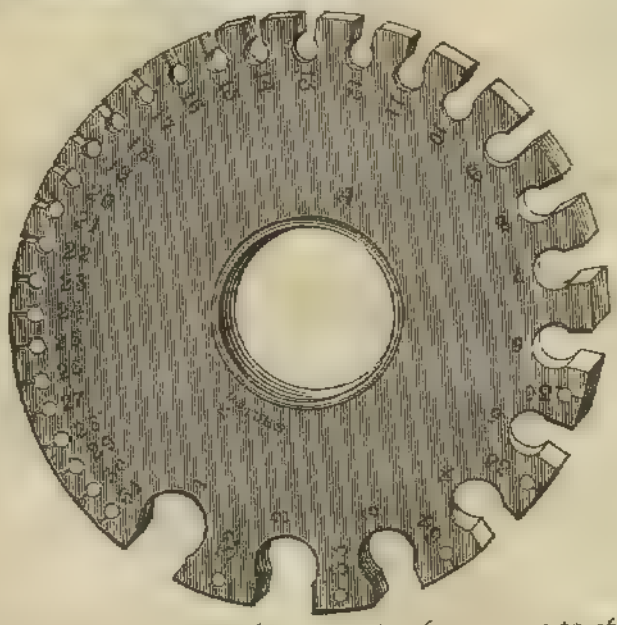
Size	30 to 12	11 to 1	A to D	E to M	N to P	Q to T	U to W	X to Z	
Diam., in., about.	$\frac{1}{16}$ to $\frac{5}{128}$	$\frac{5}{128}$ to $\frac{7}{128}$	$\frac{7}{128}$ to $\frac{1}{4}$	$\frac{1}{4}$ to $\frac{9}{32}$	$\frac{9}{32}$ to $\frac{5}{16}$	$\frac{5}{16}$ to $\frac{11}{32}$	$\frac{11}{32}$ to $\frac{3}{8}$	$\frac{3}{8}$ to $\frac{13}{32}$	$\frac{7}{16}$, $\frac{1}{2}$
Per Foot	$0.25	.30	.38	.50	.75	1.00	1.25	1.50	2.50 2.50

See elsewhere in this Catalogue for prices and sizes of Brass Gears.

No. 292. IRON WIRE GAUGES.

ROUND OR OBLONG.



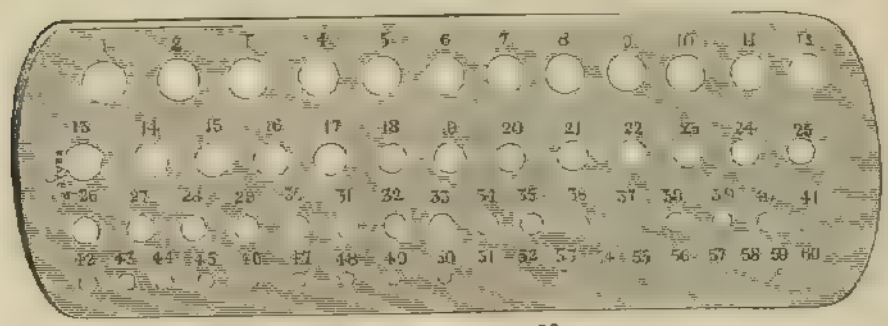


Sizes	1 to 26	o to 26	1 to 36	o to 36	oo to 36	ooo to 26
Each	$2.75	2.88	3.50	3.75	3.88	3.38

Small Oblong Pocket Gauge, 1 to 26 ..... each, $2.75
" (Double Round) Pocket Gauge, 1 to 36 ..... " 3.75
" (" Oblong) " " 1 to 36 ..... " 3 75

The circular style are made all sizes except 1 to 26. The oblong are only made Nos 1 to 26 and o to 36.

STEEL WIRE GAUGES.



No. 293.

The Steel Wire Gauges are used exclusively for gauging Stubs' Bright Steel Wire, Twist Drills, Pinion Wire, Curriers' Steels, etc.

Nos. 1 to 60 ..... each, $2.50
" 1 to 70 ..... " 3.00
" 1 to 80 ..... " 4.25
No. 294. A to Z ..... each, $2 50

STUBS' SCREW PLATES.

Full size cut of 6 sizes.

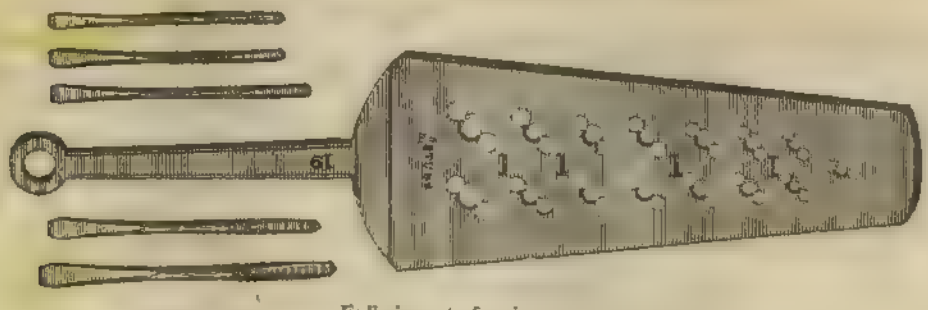
No 180 BETWEEN CLOCK AND WATCH. PLAIN.

Sizes	5	6	7	8	10	12
Dia. of hole by Stubs' Gauge, 1 to 60	45 to 55	35 to 55	32 to 55	28 to 54	25 to 54	21 to 54
Cuts from	$\frac{1}{64}$ to $\frac{1}{16}$	$\frac{1}{8}$ to $\frac{1}{16}$	$\frac{3}{64}$ to $\frac{1}{16}$	$\frac{1}{32}$ to $\frac{1}{16}$	$\frac{1}{64}$ to $\frac{1}{16}$	$\frac{3}{64}$ to $\frac{1}{16}$
Each	$0.75	1.00	1.25	1.50	2.00	2.50

No. 179. WATCH. PLAIN.

Sizes	5	6	7	8	10
Dia. of hole by Stubs' Gauge, 1 to 70.	55 to 63	53 to 64	53 to 67	50 to 67	45 to 68
Cuts from	$\frac{1}{32}$ to $\frac{1}{16}$	$\frac{5}{64}$ to $\frac{3}{32}$	$\frac{1}{64}$ to $\frac{1}{32}$	$\frac{3}{32}$ to $\frac{1}{16}$	$\frac{1}{16}$ to $\frac{1}{32}$
Each	$0.75	.00	1.25	1.50	2.00

STUBS' NOTCHED SCREW PLATES.



Full size cut of 5 sizes.

No 180—Sizes.	5	6	7	8	10	12
Each,	$1.38	1.75	2.13	2.50	3.25	4.00

Size of cutting part same as No. 180. Plain.

No 179 Sizes.	4	5	6	7	8	10
Each,	$1.13	1.38	1.75	2.13	2.50	3.25

Size of cutting part same as No. 179. Plain

According to the size, a corresponding number of Taps accompany each plate.
The above plates are Bright.

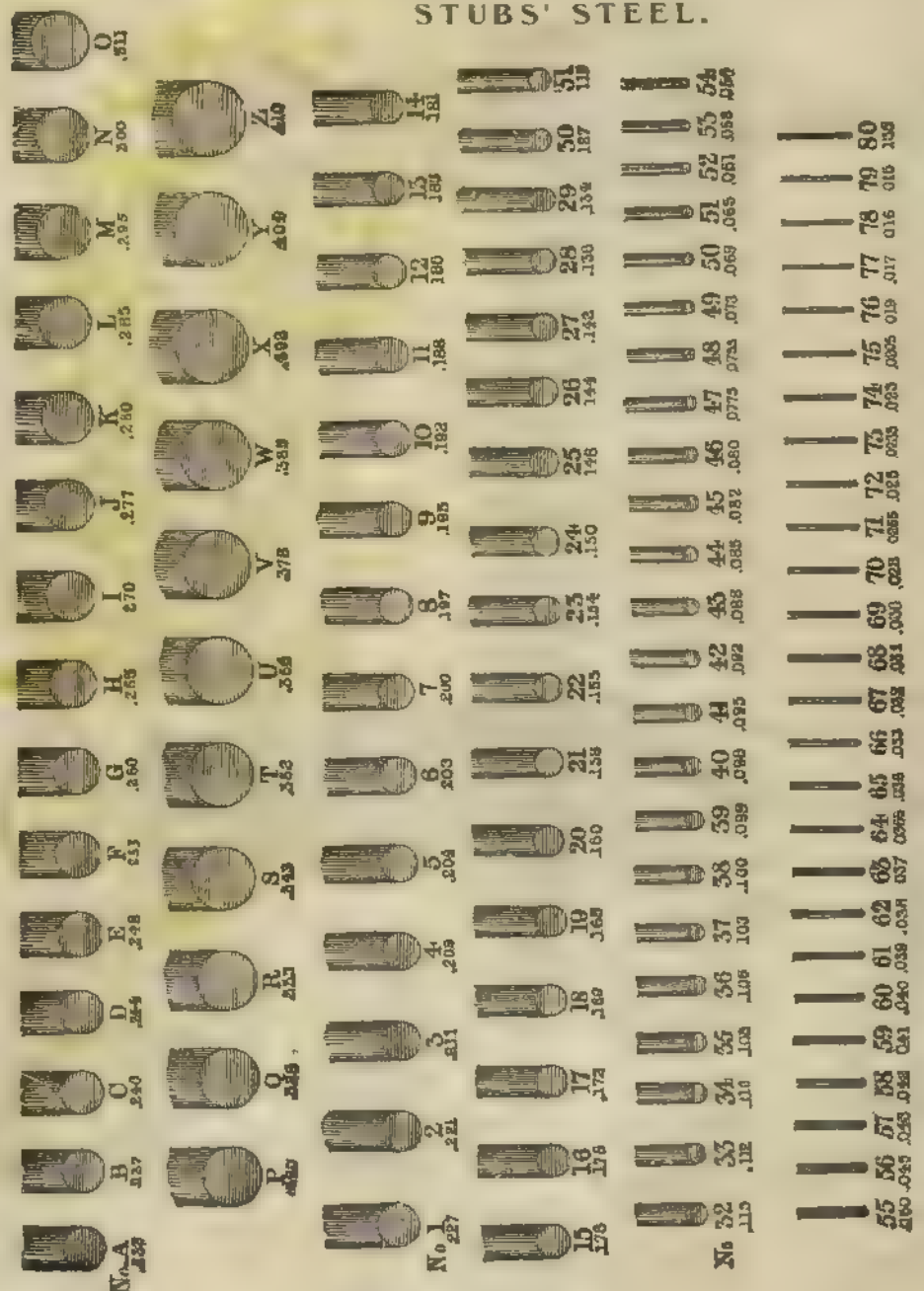
STUBS' No. 181 A. CLOCK SCREW PLATES.

BLACK. NOTCHED.

Sizes	6	7	8	10	12	14
Diameter of hole by Stubs' Gauge,	18 to 37	15 to 37	11 to 37	2 to 37	$\frac{1}{64}$ to 37	$\frac{1}{64}$ to 37
Cuts from	$\frac{1}{32}$ to $\frac{1}{8}$	$\frac{3}{32}$ to $\frac{1}{8}$	$\frac{1}{16}$ to $\frac{1}{8}$	$\frac{1}{4}$ to $\frac{1}{8}$	$\frac{3}{16}$ to $\frac{1}{8}$	$\frac{3}{8}$ to $\frac{1}{8}$
Each	$1.50	1.84	2.17	2.84	3.75	4.92

According to the size, a corresponding number of Taps accompany each Plate

STUBS' STEEL.



Bright Round Steel Wire, in 1 and 3 feet lengths.

¾ in. to No 5,	$0.95
Nos. 6 to 15	1.10
" 16 " 30	1.25
" 31 " 38	1.35
" 39 " 46	1.55
" 47 " 50	1.80
" 51 " 54	2.10
" 55 " 57	2.60
" 58 " 60	3.00
" 61 " 62	3.40
" 63 " 65	3.90
" 66 " 68	4.35
" 69 " 70	4.70
" 71 " 73	5.15
" 74	5.60
" 75	5.80
" 76	6.00
" 77	6.45
" 78	6.85
" 79	7.30
" 80	7.75

We carry in stock 3 feet lengths, from ¾ in. to No. 55 inclusive; and 1 foot lengths, from ½ in. to No. 80 inclusive.

Bright Square Steel, in 1 foot lengths.

Size,	1/16	3/32	1/8	5/32	3/16	1/4	5/16	3/8 inch.
Per lb., No. 6, I, W, G, and larger								$1.75
" Smaller								2.40

Bright Oval Steel, in 1 foot lengths.

Assorted sizes for Jewelers' Mandrils..per lb. $2.40 Stubs' Sheet Steel to No. 20.....per lb. 35c.

BOW DRILL STOCKS.

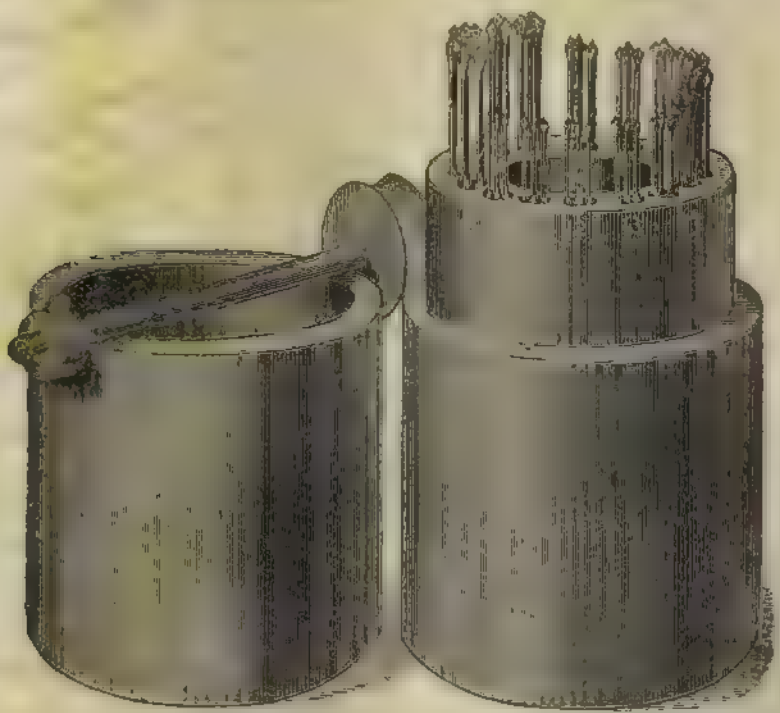
Plain, as in cut.....each, 15c. | With Chuck.....each, 25c.

PUMP DRILLS.

Small.....$1.25
Medium.....1.50
Large.....2.00

These prices are for Drills with handles.

Handles for Pump Drills.....each, 10c.
Ee-skins for Pump Drills.....“ 10c.



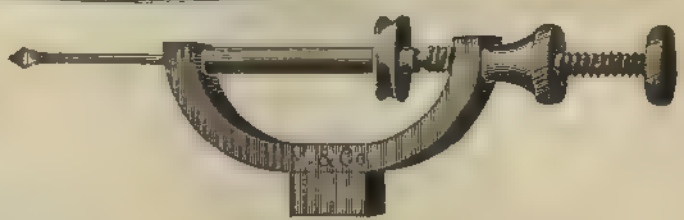
SWISS BOW DRILL STOCKS.

Bow Drill Set of 48 Drills, 16 different sizes, 3 of each, to be used with Drill Bow; in boxwood box.

Each.....$1.75

DRILL STOCKS TO FIT IN VISES.

Each.....40c.



WHALEBONE DRILL BOWS.

Assorted lengths, 8 in., 10 in., 12 in., 15 in., 17 in., 19 in., 21 in., 23 in., 25 in., each, 10c. to 50c.

DAGGER SQUARE BROACHES.

For Watch Case Makers.

Uniform in size and taper, excellent temper, sharp and perfect cutting edges.

No. 0, 1, 1½, 2, 2½, 3, 3½,.....per gross, $2.00
No. 4, 4½, 5, 6, 7,..... “ 2.50

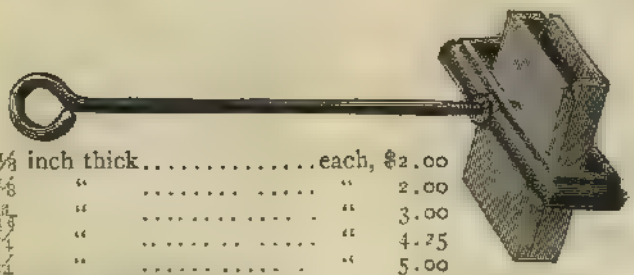
OPEN INGOTS.

Planed.....each, $2.00
Rough..... " 1.25

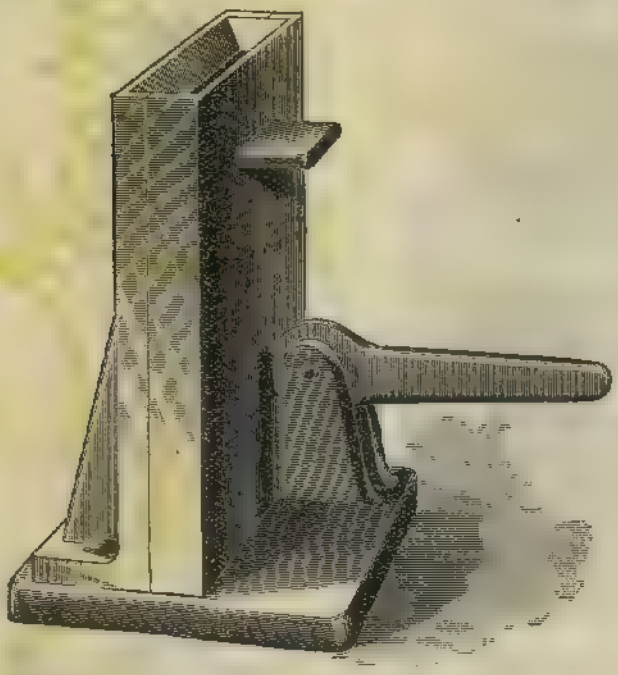
JEWELERS' SLIDING INGOTS.

With Screw Handle.

FINISHED SMOOTH.



For plate, 3¾ inches long, 1 1/16 inches wide, ⅛ inch thick.....each, $2.00
For plate, 4¾ " 1¼ " ⅛ " ..... " 2.00
For plate, 5½ " 2 " 1/16 " ..... " 3.00
For plate, 7 " 1½ " 1/16 " ..... " 4.25
For plate, 7 " 3 " ¼ " ..... " 5.00
For rings, half round, 4 sizes, 4⅞ in. long by ¼, 5/32, 1/16 and ⅜ in. wide . " 2.00



UPRIGHT SLIDING INGOTS.

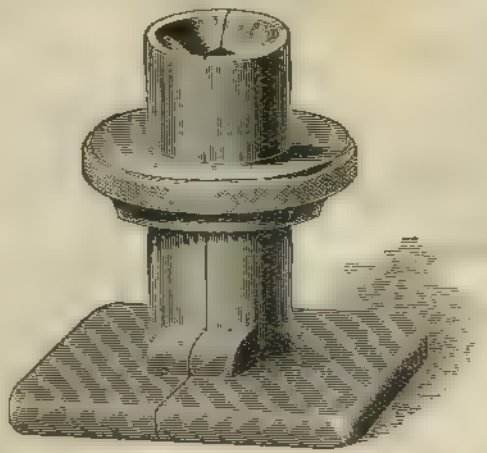
The body of these Ingots are well made of close gray iron; the lever of malleable iron. The inside surfaces are milled perfectly smooth, and coated with a compound to prevent the metal adhering to them. They are adjustable sideways, so that any width of metal from 2¾ inches down can be cast. In ordering, give number of Ingot and thickness of same.

No. 1, 3 in. high, 2¾ in. wide, ⅛ and 1/16 in. thick $2.00
No. 2, 4½ in. high, 2¾ in. wide, ⅛, 3/16 and ¼ in. thick..... 2.50
No. 3, 6 in. high, 2¼ in. wide, 1/16, 3/16 and ¼ in. thick..... 3.00

CASTING FLASKS.

This tool is used in connection with cuttle-fish bone, for casting ornamental work. It forms a riser over the work cast, thus producing sharp, clean casting.

Each..... $1.50

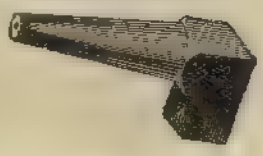


ALLOYS.

Guinea Alloy.....per lb. 75c.
Star Alloy..... " 65c.
Copper Shot..... " 35c.
Copper Disc..... " 30c
Copper Scrap (Pure)..... " 25c.
Pure Copper Wire for Alloy..... " 40c.
Oreide for Alloy..... " 30c.

THIMBLE MANDRELS.

Made of Cast Steel, Hardened and Tempered.



Each..... 60c.

PLAIN RING MANDRELS.

With Handle

Length .....inches.	7	9	10	11	12	12	13	14
Diameter ..... "	3/16 x 1/4	3/16 x 3/16	1/2 x 1/4	1/4 x 3/16	7/8 x 3/8	1 x 1/2	5/8 x 5/8	1 1/8 x 3/8
Each	$0.75	.50	.60	.75	.85	1.25	1.00	1.25
Hardened ..... each,		.85	1.00	1.30	1.35	1.75	1.50	1.75

GRADUATED STEEL RING MANDRELS.

Graduated to Correspond with Allen's Ring Sizes.

Length.....14 inches. | Diameter.....3/16 x 3/8 inches.

Each.....$1.50

TAPER STEEL OVAL MANDRELS.

Small .....each, $1.50

Medium ..... " 2.00

Large..... " 2.75

Straight, oval mandrels for chain makers .....per pound, " 1.50

STEEL LATHE MANDRELS.

These mandrels are made of steel, and the ends are hardened. They are intended for holding work in the lathe, for turning, etc. Slightly tapered, so that they can be driven firmly into the work to be turned.

Size, inches,	1/16	1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2
Each.....	$0.25	.25	.30	.38	.45	.50	.55	.60	.65	.75	.80	1.25	1.75	2.25	3.00		

ALLEN'S STANDARD GAUGES.

Size stick, German silver, Allen's U. S. standard, each,.....$1.00

Size stick, steel, Allen's U. S. standard 3.00

Ring sizes, set of 26.....per set, 2.00

IMPROVED PATENT ADJUSTABLE MANDRELS.

For Saws, Etc.

The object of this invention is to do away with the annoyance of bushing loose fitting saws, where accurate and positive fit is a necessity. Also when a party may have an assortment of saws to use where the holes may vary in size, it will not be necessary to have a separate mandrel for each one, as it only requires three to take a range from 1/4 to 1 1/8 inch holes. Another advantage which is claimed for this mandrel over all other inventions, is the facility with which the saw may be mounted, held perfectly true and firm, it will be impossible to do otherwise, as a saw will always have a true seat in the taper of this mandrel. Each mandrel is guaranteed to give satisfaction.

DIRECTIONS FOR USING.—Slide the large collar back to the large end of the cone, place the saw on the mandrel then the small collar, taking care to have the face clean; screw the thumb nut up until the saw finds its seat, slide the back collar up to the saw and tighten with hexagon nut.

No. 1, 1/4 to 3/8 inch.....$2.00 | No. 2, 3/8 to 5/8 inch..... $2.25

No. 3, 5/8 to 1 inch.....$2.50

SCOTCH STONES.

Size, inch square.....	3/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Per gross.....	$2.50	3.00	3.50	4.00	4.50	5.25	6.00	7.00	12.00

Rag Stone, 2 ounce bundles .. per bdle., $0 75 | Red Stone. ....per bdle. $0.75
Blue " ..... " .75 | Green " ..... " .75
Scotch Stone Blocks, 8 to 14 by 1 1/2 to 3, for facing, used by watchmakers, etc., ...per lb, 35

JEWELERS' RUBBING STONE BLOCKS.

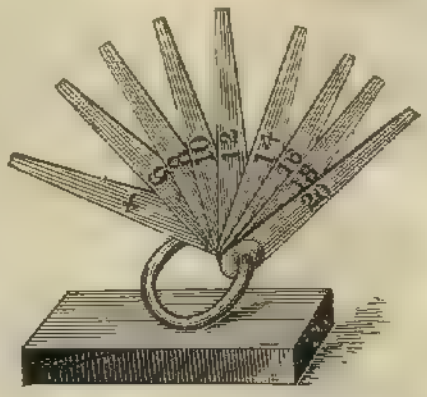
Good fine grit, 10 x 14 x 2 inches thick..... .....each, $1.25

SCOTCH STONE HONES.

9 in. long by 2 in. wide by 1 1/2 in. thick.....per lb., $0.35

BLACK STONES.

For gold tests.....each, $0.50 to $1.00



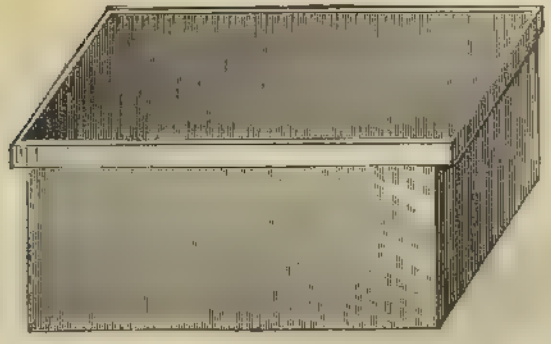
STONE DIPPING BASKETS.

Acid Proof.

Flat Bottom.

	Wide	High.	Each.
Flat Bottom,	10	x 10.....	$2 00
" "	9	x 9.....	1 75
" "	8	x 8.....	1.25
" "	7	x 7.....	1.00
" "	6	x 6.....	75
	Wide	High.	Each
Round Bottom,	10	x 5 1/2.....	$1.50
" "	9	x 5	1.10
" "	8	x 4	1.00
" "	7	x 3 1/2..	.90
" "	6	x 3	.70

Round Bottom.



COPPER DIPPING BASKETS.

Per lb..... $0.75

ACID PROOF STONEWARE BOXES.

Oblong and Square.

1 to	10	Gallons	Capacity.....	per gal,	$1.25
10 "	20	"	"	"	1.50
20 "	100	"	"	"	2 00

CLIPPER GRINDER.

For sharpening Knives and Scissors.

The only practical household grinder.

Each $2.50

DENTAL WHEELS,

All mounted on Mandrels, to fit Dental Engines for Finishing and Polishing Surfaces.

Arkansas.

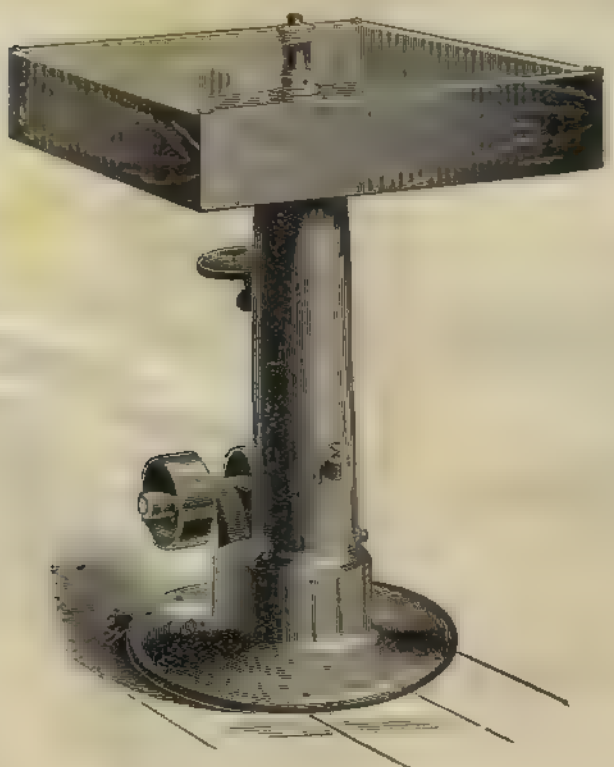
Per doz..... $13.00

Hindostan.

Per doz..... $ 6.00

Scotch.

Per doz..... $ 5.00



POWER LAPIDARY STANDS.

This machine is used for stone-cutting and lapping. The box top is lined with zinc. Photograph and further descriptions, with prices of laps, cutting discs, etc., given on application.

Weight.....lbs., 150

Each $55.00

GAS FIXTURE FITTINGS.

Excd. Head.

BATWING

BATWING.

FISHTAIL.

Lava Tips.

Batwing Lava Tips . . . . . Per gross, $1 50
Fishtail " . . . . . " 1 50

Iron Tips.

Batwing Iron Tips, ... Per gross $2 50
Fishtail " " . . . . . " 2 50

Burners and Pillars.

LAVA TIP BURNER.

BRASS BURNER.

Batwing.

Fishtail.

IRON BURNERS.

IRON PILLAR.

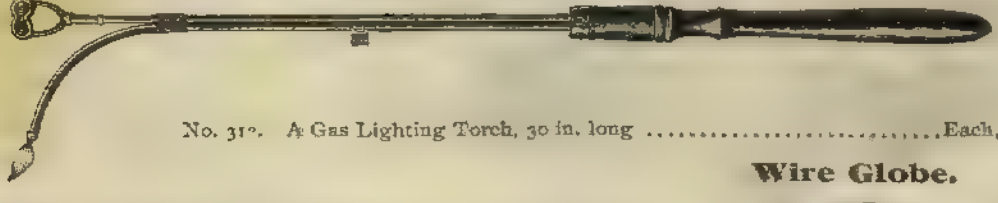
BRASS PILLAR.

EMPIRE GLOBE BURNER

Lava Tip Burners . . . . . Per gross, $4 00
Brass Burners. . . . . " 5 00
Iron " Batwing . . . . . " 6 00
" " Fishtail . . . . . " 6 00

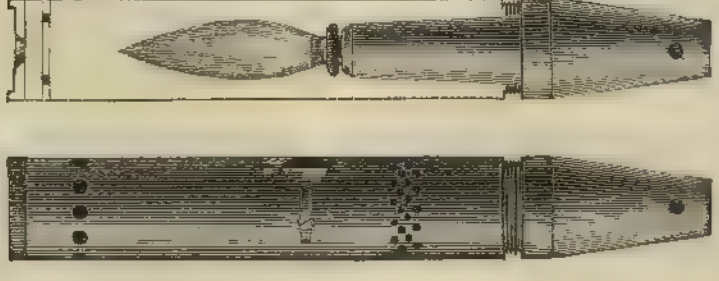
Brass Pillars, for Lava Tips. . . . . Per gross, $2 00
Empire Bulb Burners, with Tips, ... " 9 00
" " without Tips, . . " 7 50

Gas Lighting Torches.



No. 310. A Gas Lighting Torch, 30 in. long . . . . . Each, $0 50

Billingham's Improved Street Lamp Torch.



Made of Heavy Brass, Length, 11 in. . . . . Each, $6 00

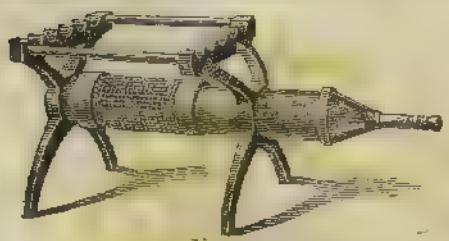
Wire Globe.

Wire Globes. . . . . Per doz., $5 00

American Wax Gas Lighters.

Put up in different sized Boxes, 18 inches long.

No. 97. 120 Tapers in box. . . . . Per doz., $3 20 No. 98. 60 Tapers in box. . . . . Per doz., $1 60
No. 99. 30 Tapers in box. . . . . Per doz., $0 80



No. 45.

SOLID FLAME BURNERS.

No. 45, Horizontal Solid-Flame Burner.

The special points about this burner are the enormous power of the flame, which at the same time is under far more perfect control than an ordinary Bunsen; the lowness and steadiness of the stand, and the ease with which the burner can be cleaned after the dirtiest work. It is in every way a most perfect burner for laboratory use, cooking, small engines, etc. The gauze is fastened only by loose rings, which in case of an accident, can be slipped back, and a new sheet of gauze put on in a few seconds.

No 45 A.	Diameter 1½	inches,	maximum	consumption,	15	ft of gas per hour	.....	each,	$1.50
No 45 B.	" 2	"	"	"	30	" "	.....	"	2.00
No 45 C	" 3½	"	"	"	40	" "	.....	"	2.50

No. 46b, Solid-Flame Burners.

The flame is solid and the same temperature throughout; the usual heating burners having a flame with a hollow center of unconsumed gas.

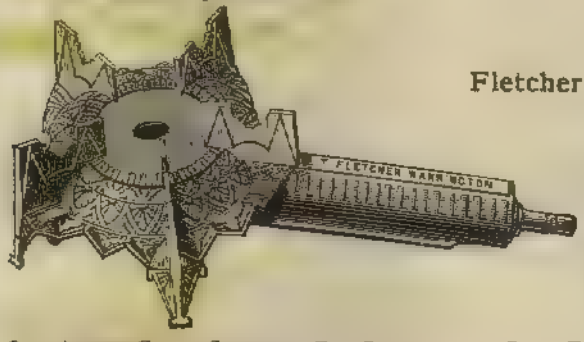
This burner gives a flame perfectly free from smell.

The 46b burner is an improvement on the old No. 46. The injecting tube is placed outside the body of the burner, reducing the height to four inches, and placing the gas jet further away from the flame so as to prevent liability to burn the india-rubber tubing. The power is the same as that of the former pattern.

This burner will with equal ease boil an egg in a small tin sauce-pan, or melt half a hundred-weight of lead in an iron pot. It will boil half a gallon of water in a flat copper kettle in five minutes, and will melt 6 lbs. of lead or solder, in an iron ladle, in seven minutes.

No 46b

No. 46b.	Solid-Flame Burner, capacity 35 ft. per hour.....	..... each,	$2.00
Adapted for Gasoline Gas.	.....	"	2.50
Extra Gauze Tops..	.....	"	.25



No. 52.

Fletcher's Special High Power Burners.

The laws ruling the construction of heating burners, as given in Mr. Fletcher's communication to the Gas Institute, and published in the Transactions for 1883, have been strictly adhered to in these burners, which, for their size, are unapproached in power by any burners in existence.

The 6-inch and 8 inch sizes have no tripod or support for vessels, as the burners are too small to carry the vessels they will heat.

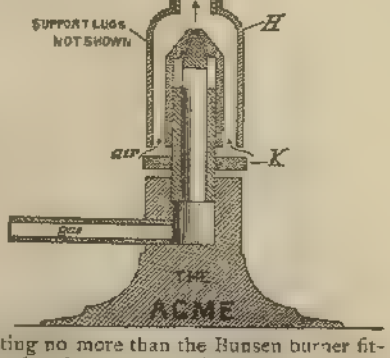
The dimensions of these burners are as follows:

	Size Across Gauze Surface.	Gas Consumption, Cubic Ft.	Gas Pipe Required.
No. 52 A.	..2¾ inch diam.	25 feet per hour.	⅜ inch clear bore
No. 52 B	.. 4 inch diam.	40 feet per hour.	½ inch clear bore
No. 52 C.	..6 inch diam.	90 feet to 100 per hour	¾ inch clear bore
No. 52 D	.. 8 inch diam.	200 feet to 250 per hour.	1 inch or 1½ inch.

No. 52 A.....	$2.25	No. 52 C.....	$5 50
No. 52 B.....	3.00	No. 52 D.....	11.00

Prices for Gasoline Gas quoted on application.

THE "ACME" BURNERS.



For burning all kinds of gas of variable quality at varying pressure, the "Acme" burner is the acme of perfection.

By turning H, as shown in the cut, both air and gas are admitted at the same time into the burner-tube. The least turn of either part H or K makes a marked change in the flame. K is a movable air-regulator. It is obvious that any desired flame can be had readily and conveniently. The support lugs of H are not shown in the cut. The air feeds the burner in a way keeping that part cool necessary to operate it. For burning ordinary gas the "Acme" is superior to the "regulated" Bunsen Burners of the trade as perfect combustion may be had at all times at the will of the operator, while a higher heat also can be had by use of the air-regulator K. As wasted gas is wasted cash the saving thus effected by the "Acme" is apparent.

The "Acme" combines the principles of the Bunsen, Muencke, Finkner and Venable burners all in one. The "Acme" without its base is perfectly adapted for constructing combustion and digesting furnaces, and all similar heating apparatus of the laboratory and is as easy, simple and quick to operate, while costing no more than the Bunsen burner fitted with a stop-cock. Any gas that might escape from between the threaded parts forming the valve, from any cause—as wear, or the absence of soap or grease—is drawn up into the burner and consumed, a feature not possessed by any other gasolene burner. This is no small consideration where many burners are in operation burning gasolene air-gas.

Each.....$1.25

UNIVERSAL COMPOUND BLOW-PIPES.

This Compound Blow-Pipe has a universal motion, and is used with the foot bellows, which gives a constant blast. Three sizes of jets accompany the blow pipe. It will be found very useful, and for small work it takes the place of a forge.

Each..... .....$4.50

Nos. 6d and 6e.

AUTOMATON HAND BLOW-PIPE ON STANDARD.

No. 6d.

The Standard shown in the engraving is adapted to either the No. 6b or 6c. The operator is thus enabled to use the blow-pipe on the table, in the same manner as the No. 6a. The swivel gives even greater latitude of adjustment than the No. 6a is capable of, while the blow-pipe is easily detached and capable of use in the hand.

No. 6d requires Foot Blower No. 9a. No. 6e requires Foot Blower No. 9b.

No. 6d. Automaton 6b on Standard..... .....$4 00
No. 6e. Automaton 6c on Standard 5 50

NOVELTY HEATER.

A very convenient arrangement for making tea and coffee, heating glue, etc.

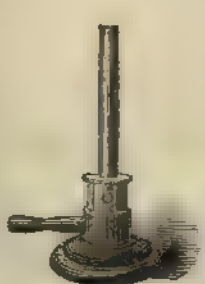
It is made in two styles, to screw on an ordinary burner nozzle, or to slip over a common gas burner.

Height, 3 inches. Diameter, 2¼ inches.

Each.....$0.50.

BUNSEN GAS BURNERS.

Plain.
Each, $0.30



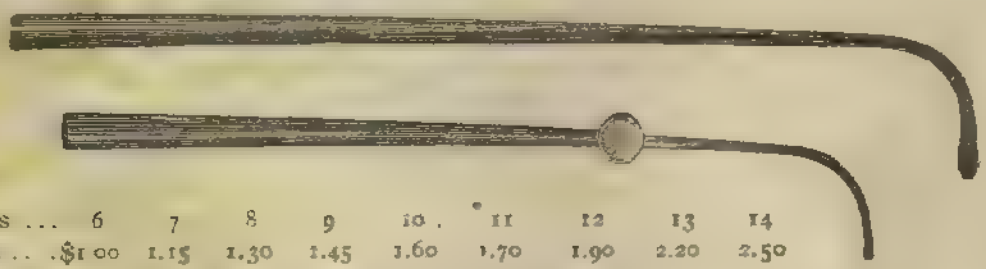
Adjustable.
.75

With Tripod.
1.00

Wing Top.
1.00

Crown Top.
1.00

IMPORTED BLOW-PIPES.



Length, inches ...	6	7	8	9	10	11	12	13	14
Plain, per doz ...	$1 00	1.15	1.30	1.45	1.60	1.70	1.90	2.20	2.50
With Ball, per doz.		2 70	2.90	3 00	3.15	3 30	3.45		

NO. 6 BRAZING BLOW-PIPE.

For Gas and Air.

No. 6 Blow-pipe. Price, each..... 50c.

CHARCOAL SOLDERING BLOCKS.

This charcoal is chemically prepared, and will neither burn to ashes nor emit sparks, like common charcoal It is easily punctured, and work may be pinned down firmly.

2¼ in. x 3¼ in.	Per dozen		$1 50
3 in. x 4¾ in.	"	"	3 00
2¼ in. x 6¾ in.	"	"	3 50
4 in. x 7 in.	"	"	4.50
2¼ in. x 12 in.	"	"	4.50

GAS HEATERS.

For Tempering Drills, Punches, Chisels, Small Tools, etc.

This Heater is to take the place of a forge in heating and tempering machinists' small tools. A piece of steel half an inch in diameter can be heated sufficiently to harden in about six minutes It does not heat to a degree that will injure the quality of steel, which makes it very valuable for heating small pieces.

DIRECTIONS.—Put on a sufficient head of gas to prevent the flame from descending into the tube. For heating larger pieces, the flame should be nearly three inches wide. The upper ends of the curved side pieces should not be more than ¼ of an inch apart. The articles to be heated should be held in the upper part of the flame, above the central blue part and parallel with it. The larger the piece to be heated the further it should extend into the flame. The heater should be heated in a dark place, and supports may be provided for greater convenience in heating heavy articles.

Price, each..... 75c.

MATCHLESS SELF-LIGHTING GAS BURNER.

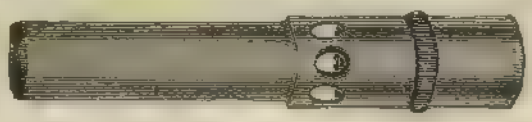
These burners are made entirely of brass, thoroughly finished in appearance, and guaranteed in every particular. A small auxiliary tube at the side maintains a small light when the large flame is extinguished Will fit any gas bracket or fixture and is very easily put on.

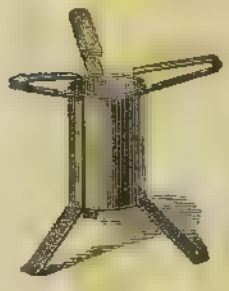
Price, each..... 50c

BAKER'S ATMOSPHERIC BURNER.

A new and powerful atmospheric burner; will not smoke or light down

Each.....$0.25
Larger size.....35
With base, 25c each extra.





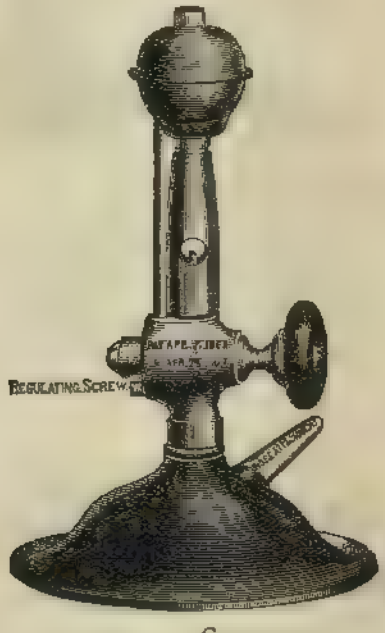
BURNER JACKETS.

For use with Bunsen and other Burners.

Small.....each, $0.75
Medium.....“ 1.00
Large.....“ 1.25

JEWELERS' SELF-LIGHTING BURNERS.

F



G

F. Soldering Burner.....each, $1.25
G. Bunsen Burner.....“ 1.25
Either Style without Base.....“ 1.00

THE "PERFECT" DUPLEX BURNER.

This burner is an improvement on the old revolving duplex burner originally devised, and is intended to meet the demand of Jewelers and Metal Workers for a "Perfect" self-lighting, soldering and illuminating burner combined. The small jet, once lighted, ignites either burner by a quarter turn of the knob to the right or left. The knob not being affected by the heating up of the burner, will not burn the hands of the operator. The torch in the burner is perfect. The plug has a long bearing, is properly ground in and will not easily wear. We believe this burner obviates all the defects of the old style revolving burner. The "Perfect" Duplex Burner is well made in every particular and each one is fully warranted.

On Stand to connect with rubber hose.....$1.25
Without Stand to apply to gas bracket..... 1.00

TABLE ANVILS.

Each. $1.25

HILL'S SOLID STEEL ANVILS.

Forged from solid steel. The horn is 2 inches long in addition to the length of face given below.

No. 1, 5 inches long; 1¼ inches wide; weight 5 lbs; Price, $2 00
" 2, 6 " " 2 " " " 7 " " 2.50
" 3, 7 " " 2 " " " 9 " " 3 00

SWISS ANVILS.

To Fit in Vise.

Each.... ..... $0 35

EAGLE ANVILS.

Warranted better than the best English Anvil; face in one piece, of best tool cast steel, perfectly welded, perfectly true, of hardest temper and never come off or "settle." It does not bounce the hammer back, and therefore can do more work with lighter hammer. Horn of tough untempered steel, never to break or bend. Only Anvil made in the United States fully warranted as above.

Weighing 100 lbs. to 800 lbs. ..... per lb., 10c.

SMALLER ANVILS ("MINIMS.")

	No. 000	1	2	3	4	5	6	7	8	9	
Weight about....	½	18	20	30	40	50	60	70	80	90	lb.
Each.....	$1.00	3.50	4.00	4.30	4.50	5.00	5.50	6.00	7.00	8.00	

PETER WRIGHT'S ANVILS.

Solid Wrought Iron, Steel Face.

Under 85 lbs. ..... per lb.
85 to 250 " ..... "
Over 250 " ..... "

TRENTON ANVILS.

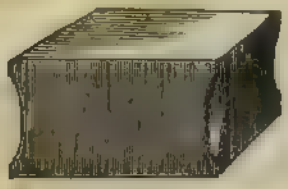
Solid Wrought Iron, Steel Face. Warranted.

85 to 250 lbs ..... per lb.
70 to 84 " ..... "
60 to 70 " ..... "
50 to 60 " ..... "
40 to 50 " ..... "
30 to 40 " ..... "

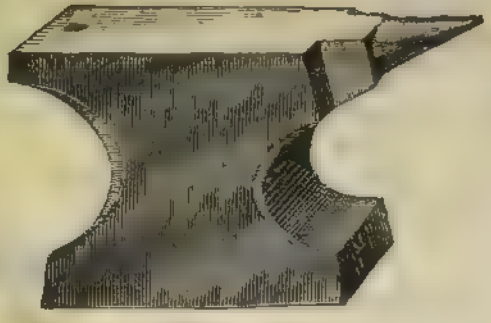
See Index for Blacksmiths' Tools, such as Rasps, Hammers, Tongs, Forges, etc. We carry a complete line.

GERMAN GOODS.

No. 10.

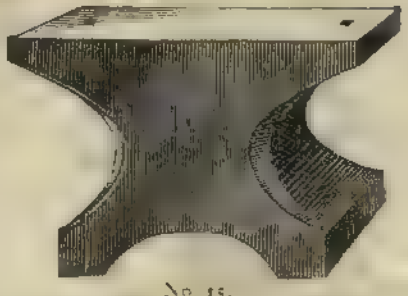


No. 12.



No. 13.

No. 14.



No. 15.

For Jewelers. Cast Steel, Mirror Polished.

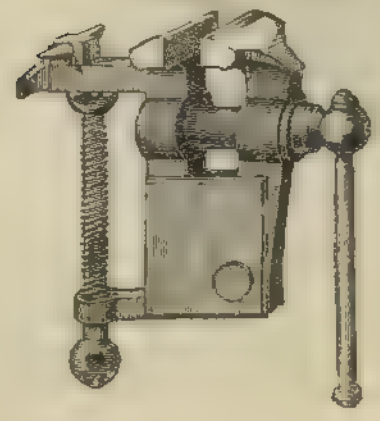
No.	10.	Planishing Anvils, to 1 lb.	each,	.48
"	10	" " over 1 lb.	per lb	.48
"	12	Flat Anvils, to lay on table,	per lb.	.65
"	13	Anvil with one horn, to 1 lb.	each,	.72
"	13	" " " over 1 lb.	per lb.	.72
No.	14.	Anvil with two horns, to 1 lb.	each,	.72
"	14	" " over 1 lb.	per lb.	.72
"	15.	" without horn, to 1 lb.	each,	.72
"	15.	" over 1 lb.	per lb.	.72

DRILL BRACES.

Each with 6 Bits.

No. 40 Regular	5	6	7	8	9	10	12 inch.
Per dozen	$7.00	7.50	8.40	9.20	10.00	11.00	12.00

No. 42. Small, per dozen, $4.50
" 190. For Jewelers, " 4.20



BENCH VISE.

No.	171.	With Anvil, 2 to 4 lbs.	per doz., $20.00
"	171.	5 lbs.	" 25.00
"	175.	Jewelers', with Anvil, 1½ to 4 lbs, inclusive	per doz., 37.00
"	176.	Jewelers', with Bick Iron, 1½ to 4 lbs,	per doz., 42.00
"	176.	4 lbs.	" 41.00
"	180	Jewelers, Stubs Pattern, extra fine, with Anvil, 1½ to 4 lbs.	per doz., 46.00
"	181.	Stubs' Pattern, extra fine, with Bick Iron, 1½ to 4 lbs.	per doz., 51.00

JEWELERS' AND POLISHERS' SUNDRIES.

Asbestos Board, for soldering blocks, in sheets 40 inches square, ⅛, ¼, ½, ¾, 1 thick...Per lb., $0.25
Ash, Pearl.....Per lb., $0.15
Beeswax, best refined..... " .35
Borax, Melting..... " 15
Borax, Slate..... " .40
Boxwood Sawdust.....per qt., 5c.; per bbl., $3.00
Belts, Soldiers', for polishing leather.....each, .30
Chromate of Iron, for polishing gravers and other hardened metals.....per lb. 5.00
" " .....per bottle, .25
Crocus, mineral powder for fine polishing.....per lb., .10
Crocus Composition, sometimes called "Red Composition." Is used for rougher grades of polishing. There are about a thousand different grades and many prices. We make a run on one good, even grade, and it works well. Our price is.....8c. per lb. in small quantities; 100 lbs., per lb., .06
Prices on large quantities upon application.
Chamois Skins, "Rouged." These skins are boiled in rouge, and chemically prepared, so that they will not "smut" off or soil anything. They are used extensively by jewelers and silversmiths to keep stock and samples in bright, untarnished condition. Price, $1.00 to $2.00 each. See Index for plain Chamois skins.
Copper Scrap Pieces, of C. P. copper, used to alloy gold.....per lb., .25
Elk Skins. Used for polishing fine gold work, such as watch-cases; price, $1.75 to $2.75 per lb., according to size and quality. In appearance they look like a large, thick chamois skin.
Fish, Cuttle. Used by jewelers for holding work to be soldered, and for making fine small casting-molds. Prime selected pieces.....per lb., .50
Glass, Ground..... " .15
Olston, Powder, Arkansas..... " .15
Putty Powder..... " .20
Pumice, Lump, Powdered and Bricks..... " .05
" Fine selected, for silversmiths..... " .12
Rouge. The M. & Co. No. XXG Hard and Soft Rouge is the very finest quality, and made especially for gold and silver. The Hard is in cake form; the Soft is in powder.....price, per lb., .50
Jewelers' Hard Rouge, fine quality, No. XG..... " " .35
Nickel Rouge. Used by brass-finishers and nickel-platers. Many qualities on the market; we keep two—the "Goodrich brand," which sells at 20c. per lb; the "Toner" brand, 15c. The Goodrich is the very finest, while the Toner is excellent.
Rotten Stone, selected Lump..Per lb., $0.15 | Tripoli, Powdered.....per lb., .20
" " Powdered..... " .10 | " Lump..... " .20
Tripoli Composition, or "White Composition," used mostly by brass polishers; comes in the shape of bricks. Many qualities on the market; the best (which we sell), per lb., 10c.; 100 lb. lots, 8c. per lb. Special prices on larger quantities.

NICKEL-PLATERS' SUPPLIES.

Nickel Salts, best quality.....per lb., .20
Nickel Anodes. A poor quality is dear at any price. Ours are the best. The following sizes, of which the approximate weights are given, are always in stock:

2 x 4 x ⅛ inch thick.....	8 oz.	5 x 8 x ½ inch thick.....	4¾ lbs.
2½ x 8 x ⅜ " "	2½ lbs.	5 x 12 x ½ " "	8½ "
4 x 7 x ½ " "	1½ "	8 x 12 x ½ " "	14 "
4 x 7 x ⅞ " "	2½ "		

Other sizes cast to order.

Owing to the market fluctuations of Nickel, we prefer not to print prices of Anodes.
Cyanide of Potassium. Chemically pure; packed in sealed tins, 50 and 100 lbs.; prices on application. Fused Cyanide—we carry in stock 1 lb. bottles, and tins of 10 and 25 lbs.
Lye. Used by many in the place of potash and other caustics for removing grease from work to be plated. Ordinary potash is unsatisfactory to handle, and varies in strength. Our "Columbia" brand is in small white crystals, dissolves quickly into a clear solution, and requires about half as much as other lyes.
Price in 10 lb. cans.....per lb., .12 | Price in 50 lb. cans.....per lb., .10½
Sal-Ammoniac, in Crystals.....per lb., .20
Saltpetre, Powdered or in Crystals..... " .15

VIENNA LIME.

In bottles (as per cut) ..... each, $0.15
In cans ..... per lb., .10

Special quotation on quantity lots.

WALRUS LEATHER.

The Walrus is an inhabitant of the Arctic seas. It sometimes attains a size greater than that of the largest ox. The hide, when properly tanned has a peculiar tough grain, and is used largely by brass and silver finishers, cutlery, stove manufacturers, and nickel platers.

Manufacturers of hardware, edge tools, and agricultural implements that require a fine polish, will find this leather the best, as well as the most economical for solid wheels, or for covering wood wheels.

Price per lb., by the hide, according to thickness ..... $1.00 to $2.00
Strips cut to order any width desired. For Wheels, Buffs, Cones, etc., see pages 121, 122, 123.
We can also furnish:

Buffalo Leather ..... per lb. $1.00
Hippopotamus Leather, close grained, very hard ..... " 2.00
Giraffe Leather, close grained, quite hard ..... " 1.25
Elephant Leather, soft and spongy ..... " 1.25
Sea Lion Leather ..... per lb., $0.40 to .75
Bull Neck Leather ..... Prices on application.

PURE FOLIATED DRY AMERICAN GRAPHITE.

Perfect Lubricator.

Is recommended dry, for steam and air cylinders; mixed with grease, for heavy bearings, and mixed with oil for light bearings. On being applied to a bearing it readily coats the surfaces with a shiny, unctuous veneer. These surfaces then slide on each other with very little friction. On being applied to heated bearings, the graphite soon fills up any inequalities of the bearing surfaces due to cutting, abrasion, etc., making them smooth and even, after which the bearing soon cools down. It is equally useful for wood or metal surfaces; in short, in all cases where friction exists. If the bearings are loose enough for the introduction of this thin flake graphite, it will prevent heated bearings, cool those already heated, and reduce friction better than anything else in existence.

In all cases where the service required of a lubricant is very severe, graphite will be found specially useful, as in mill steps, gears, heavy bearings, bed-plates, etc.

Trade Nos.			Trade Nos.		
630—	¼ lb paper cans ..... each,	$0.15	634—	10 lb. tin cans, screw top ..... each,	$2.00
631—	½ " " " ..... "	.25	644—	25 " boxes ..... per lb.,	.20
632	1 " " " ..... "	.30	645—	50 " " ..... "	.15
635 —	5 " " " ..... "	1.00	646—100	" kegs ..... "	.14
633—	5 " tin cans, screw top ..... "	1.25	647—350	" bbls ..... "	.10

A. O. C. BELT GREASE

There is nothing superior to this on the market.

5 lb cans ..... per lb., $0.35
Prices on larger quantities on application. Send for sample box.

Albany Grease ..... per lb, $0.35
Southwick Belt Grease ..... " .35

RUBBER TUBING.

For Use with Burners and Bellows.

Inside diameter, inches	1/8	3/16	¼	5/16	3/8	½	5/8	¾	1
Per foot	$0.08	.12	.16	.18	.20	.25	.30	.35	.45

A No. 1 BELTING CEMENT.

For Leather Belting.

Pints, one dozen in case ..... per doz., $ 9.00
Quarts, " " ..... " 15.00
Half-gallons, half doz. in case ... " 28.00
Gallons ..... per doz., $48.00
Five gallon Cans ..... per gal, 3.75
Barrels (about 45 gallons) ..... " 3.60

FLUE BRUSHES AND SCRAPERS.

Steel Coil Scraper.

Size, inches....	1 to 1¼	2	2¼	2½	2¾
Each.....	$1 00	1 10	1 20	1 30	1 40
Size, inches....	3	3¼	3½	3¾	4
Each.....	$1 50	1 65	1 75	1 90	2 00

Over 4 inches, 75 cents per inch.

Elliptic Scraper.

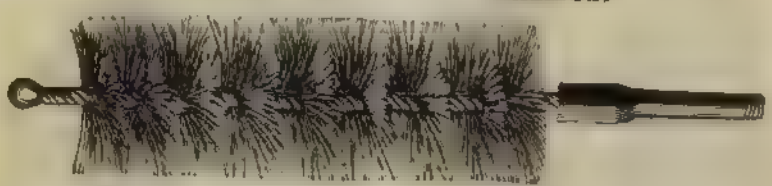
Size, inches.....	1 to 2	2¼	2½	2¾	3
Each.....	$2 00	2 25	2 50	2 75	3 00
Size, inches.....	3¼	3½	3¾	4	
Each.....	$3 25	3 50	3 75	4 00	

Over 4 inches, $1 25 per inch.

Steel Wire Tube Brushes.

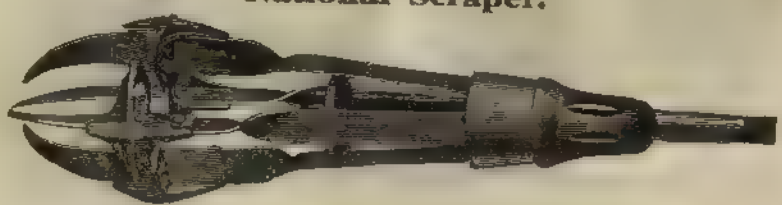
Size, inches.....	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3½	4	4½	5	6
Each.....	$1 10	1 15	1 20	1 20	1 25	1 40	1 50	1 60	1 75	2 25	2 50	2 75	3 00	3 50

Whalebone Tube Brushes.



Size, inches.....	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3½	4	4½	5	6
Each.....	$0 75	75	75	80	90	1 00	1 10	1 25	1 40	1 75	2 00	2 25	2 50	3 00

National Scraper.



2 to 6 inches..... Per inch, $1 00

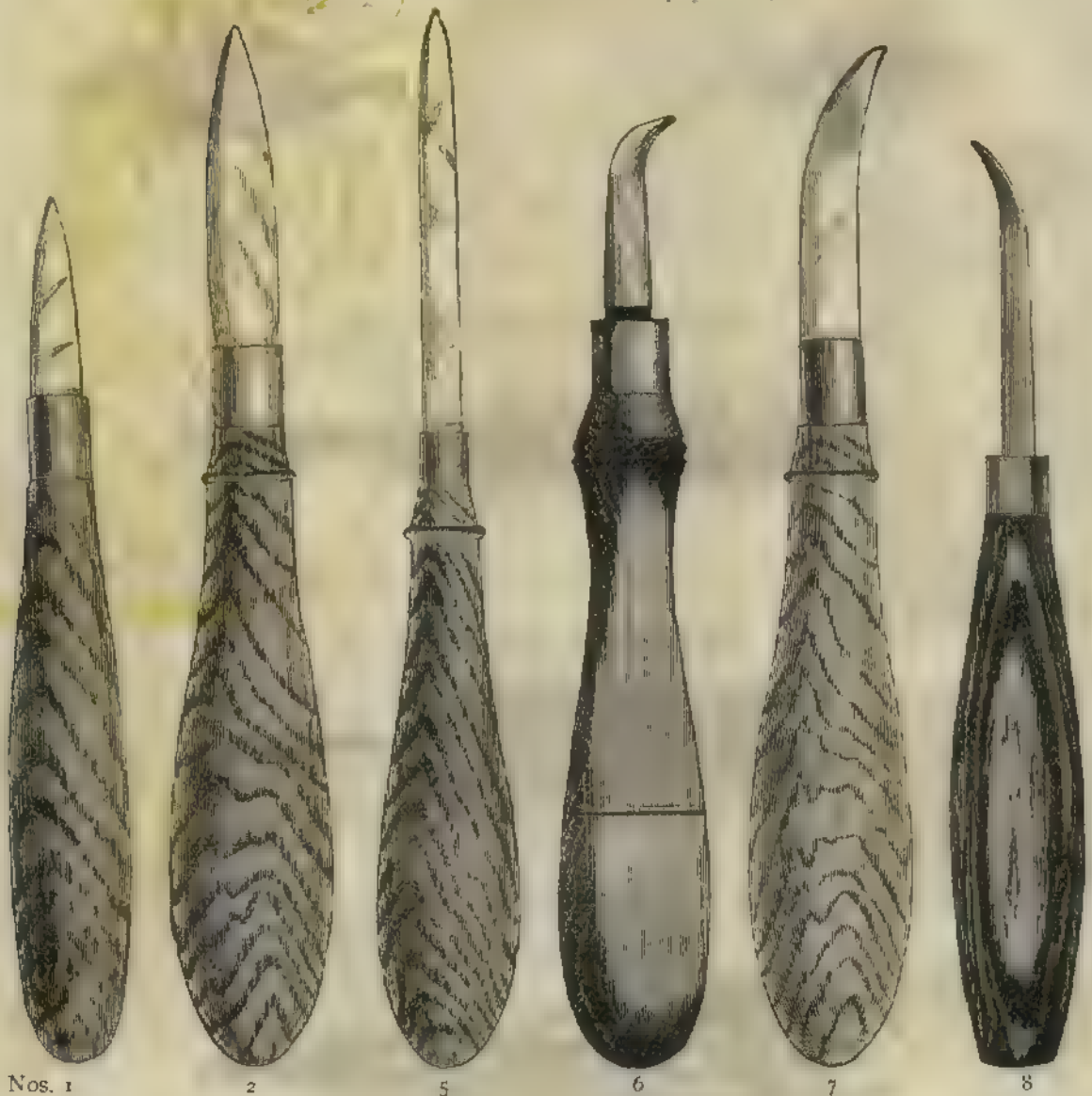
"Buffalo Duplex" Scraper.

Sizes made 1½ @ 6 inches.

Price, $1 00 per inch up to 4 inch inclusive; 4½ inch, each, $5 00; 5 inch, each, $6 25; 6 inch, each, $7 50.

JEWELERS' STEEL BURNISHERS.

Cuts are full size.



Nos. 1 2 5 6 7 8

Rosewood Handles, Oval Steel Burnishers, Mirror Polish.

No.	1	1½	2	3	4	5	6	7	8
Length	1	1½	2	3	4	3	1	2	2 in.
Each	$0.30	.35	.35	.40	.50	.50	.30	.35	.35

Rosewood Handles, 75c. each. Maple, 40c. each

SPOON BURNISHER, No. 9.

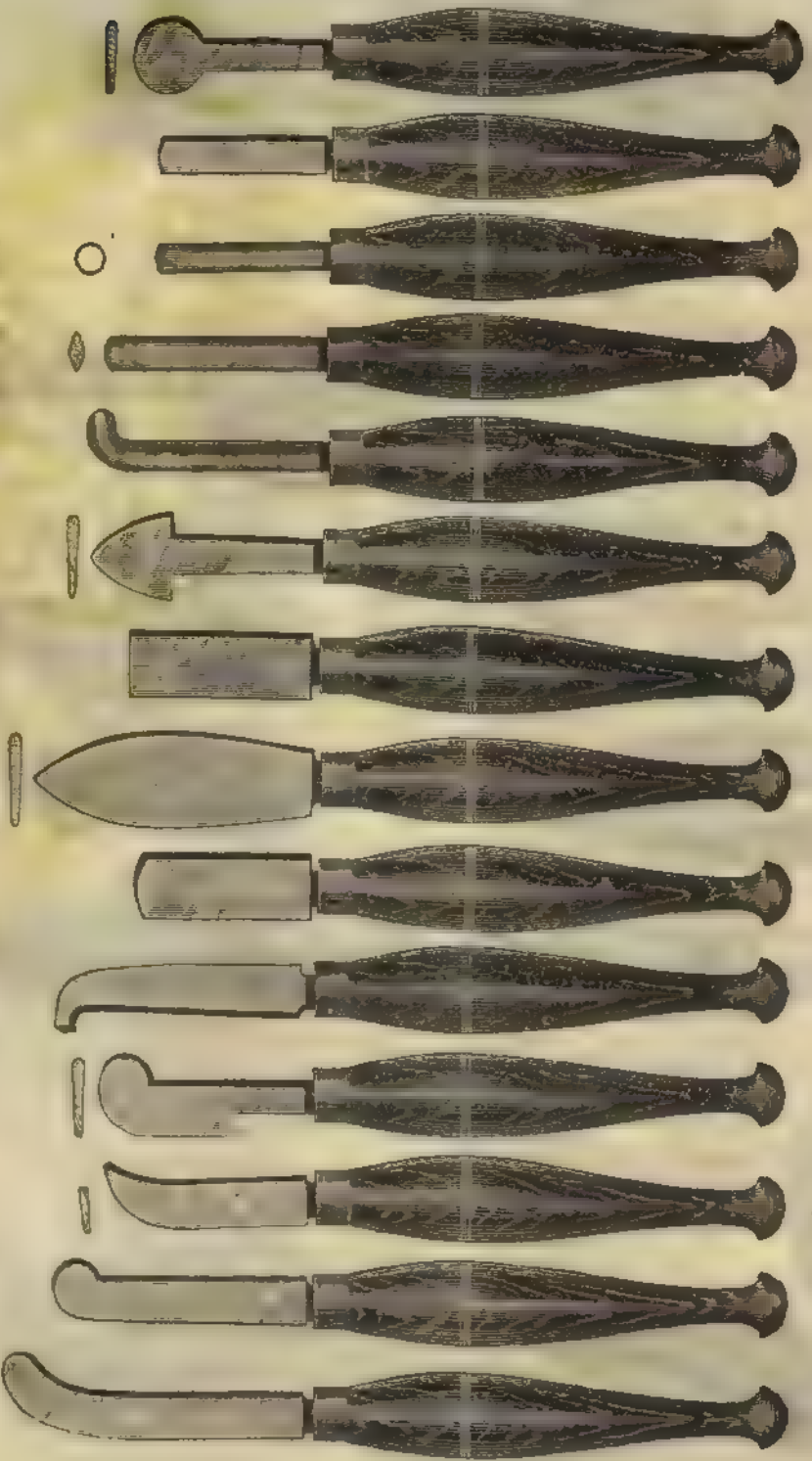
Cast-Steel, Mirror Polish.

Full size.

Each.....35c.

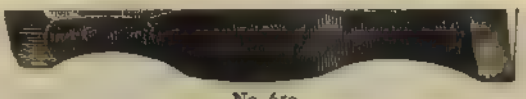
SILVERSMITHS' STEEL BURNISHERS.

Our own make. Best quality. Mirror Polish { Without Handles ..... $0.75 each
With Rosewood Handles ..... 1.10 "
With Maple Handles ..... .80 "



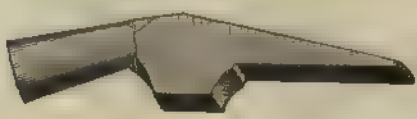
New designs and shapes being constantly added.

1 lb.....per lb. .60



No. 659.

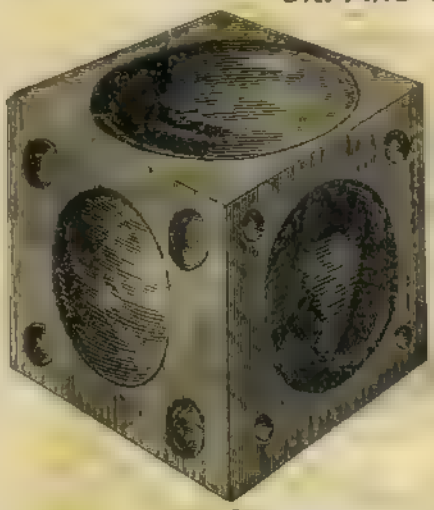
SWISS RIVETING HAMMERS.



Small.....Each, $0.20
Medium..... " .25
Large..... " .30

PEG WOOD.

DAPPING DIES AND PUNCHES.



Dapping Die

Boxwood punches for dapping dies, set of 12, per set, $1.00; steel, set of 22, $1.50, 18 punches and cutters, $2.50; 24 punches and cutters, $3.00; 35 punches and cutters, $5.00.

Dapping Punches and Cutters.

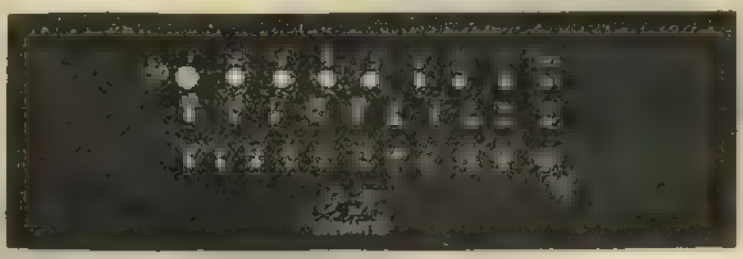
Brass dapping dies,	width,	1"	1¼	2	2¼	2½	3¼	3½ in.
" "	each,	$1.25	2.00	2.50	2.75	3.25	4.25	5.50
Iron dapping dies,	width,	1¼	1¾	2	2¼	2½	3¼	3½ in.
" "	each,	$1.60	1.75	2.00	2.25	2.35	4.00	6.00

RUBY AND SAPPHIRE DRAW PLATES.

Size of Hole	Each	Size of Hole	Each
.001	$10.00	.027 and .028	$3.25
.002	7.50	.029 " .030	2.50
.003	5.00	.031 " .032	3.00
.004	2.50	.033 " .034	3.50
.005 to .020	1.25	.035 " .036	4.00
.021 and .022	1.50	.037 " .038	4.50
.023 " .024	1.75	.039 " .040	5.00
.025 " .026	2.00		

Special sizes made to order. Wire drawn below .008 requires intermediate plates owing to its want of tensile strength. Diamond Draw Plates also furnished. Prices upon application.

STEEL DRAW PLATES.



Round and Square Holes.

French, ordinary sizes				per hole, 6c.
" with 50 holes	¼ in. to small.	⅛ in. to small.	⅜ in. to small.	
" each plate	$3.00	3.50	4.00	
" with 100 holes	¼ in. to small.	⅛ in. to small.	⅜ in. to small.	½ in. to small.
" each plate	$8.00	8.00	8.00	10.00

Half-Round and Oblong Holes. (French) ..... per hole, 8c.

BEST AMERICAN DRAW PLATES.

Round	per hole, 6c.	Oblong	per hole, 25c.
Square	" 12c.	Knife	" 18c.
Half-round	" 25c.	Grooved	" 35c.

VIENNA DRAW PLATES.

For Gold, Silver and Fine Brass Wires.

In plates of 100 holes, all small holes.....per hole, 7c.

Assorted large and small holes in the plate..... " 8c.

SPECIAL STEEL DRAW PLATES.

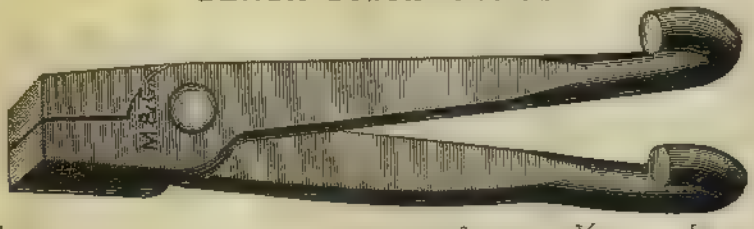
We can furnish any of the above styles at short notice. State number when ordering. Prices upon application.

HAND DRAW TONGS.

All Steel.

Width of Jaw, inches	⅝	¾	⅞	1	1⅛	1¼
Each	$1.75	1.75	1.75	2.00	2.50	3.00

BENCH DRAW TONGS.



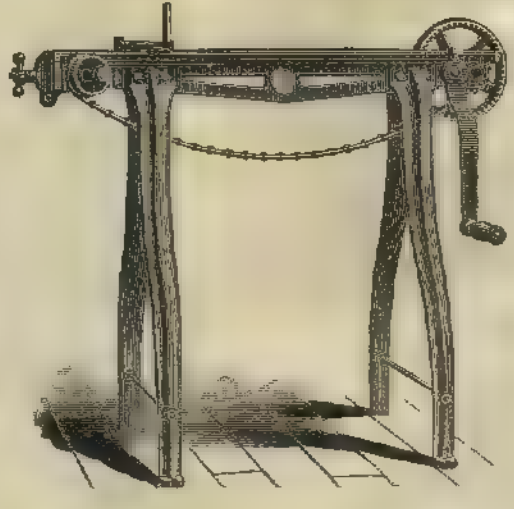
Width of jaw, inches	1⅜	1½	1⅝	1⅞	2⅛
Each	$3.50	4.00	4.50	6.00	7.50

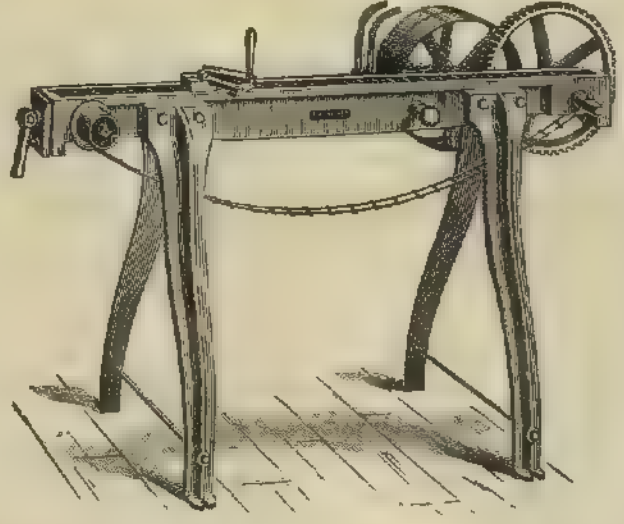
HAND DRAW BENCHES.

This machine will do all the drawing that is required in the ordinary shops where hand tools are used. It has a coiler for wire. The tongs which are made of solid steel, can be started at any point in the endless chain. The plate is held by a quickly operated cam device.

The same machine is built with brackets to screw to the wall, in place of standing on legs. In small shops where the room is limited this style is preferred by some. Length, 4 feet, weight, 100 lbs.

Each.....$20.00.



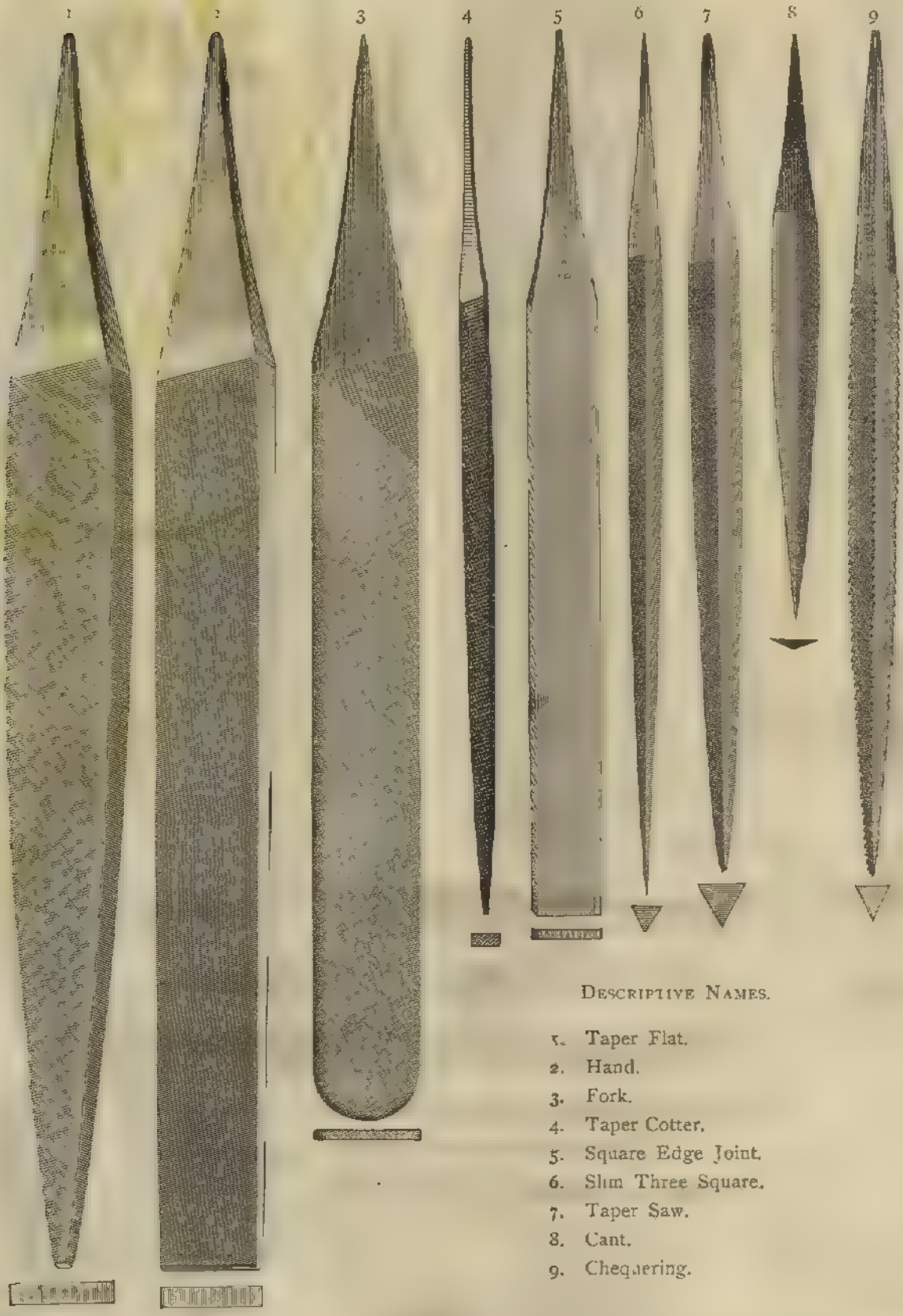


POWER DRAW BENCHES.

Manufacturers in want of a power draw bench will find this machine one that will meet all their requirements. It has the capacity of doing all the drawing in the largest factories. It has solid steel tongs that can be placed at any point in the endless chain: coiler for wire, and a quickly adjustable device for holding the plate; hand crank for use when desired. The gears are all cut, and the whole machine is well and substantially built

Length	5 feet,	weight	225 lbs.	each,	$60.00
"	6 "	"	250 "	"	65.00
"	8 "	"	290 "	"	75.00
"	10 "	"	325 "	"	85.00

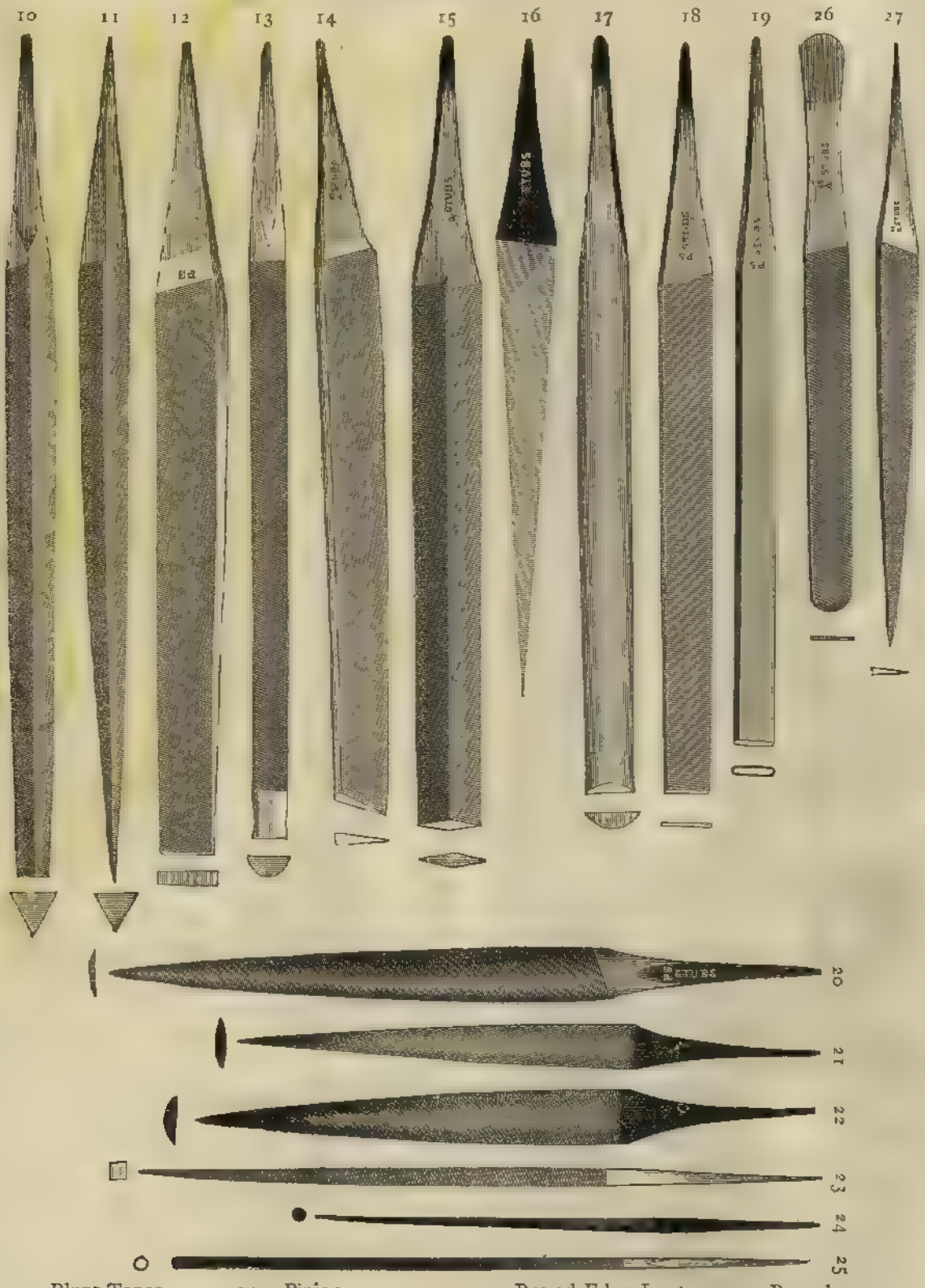
STUBS' FILES.



DESCRIPTIVE NAMES.

1. Taper Flat.
2. Hand.
3. Fork.
4. Taper Cotter.
5. Square Edge Joint.
6. Slim Three Square.
7. Taper Saw.
8. Cant.
9. Chequering.

STUBS' FILES.—CONTINUED.



10. Blunt Taper.
11. Three Square.
12. Pillar.
13. Frame Saw.
14. Pinion.
15. Slitting.
16. Warding.
17. Round Off.
18. Equaling.
19. Round Edge Joint.
20. Flat Back, ½ Round.
21. Crossing.
22. Half Round.
23. Square.
24. Round.
25. Blunt Round.
26. Dentist Separating
27. Knife.

PRICE LIST
OF
P.S. STUBS' FILES.

Saw Files, Taper or Blunt, Single or Double Cut.

1 to 3	3½	4	4½	5	5½	6	6½	7	8	9	10 inch.
$1.70	1.80	2.00	2.80	3.10	3.30	3.50	3.90	4.25	5.25	7.05	7.80

Dentists' Separating Files.

Per Dozen..... $1.95

Knife.

Inches.	Bast'd	Smooth.	Super.
1 to 3	$1.75	$1.95	$2.50

3½ inch and larger, same price as Hand

Fork Files.

Inches.	Bast'd	Smooth.
5	$3.90	
6	4.70	$5.05

Chequering.

4 inch $1.65
Trimmers bent, R. & L.. 1.95

Frame Saw.

3 to 4	4½	5	6
$2.00	2.80	3.10	3.50

Pinion Files.

3 in Bastard..... $1.05
4 " " 2.15

Square.

Inches.	Bast'd.	Smooth	Super.
1 to 3	$1.75	$1.95	$2.50
3½	1.85	2.15	2.70

4 inch and larger, same price as Taper Flat.

Hand or Pottance.

Inches.	Bast'd	Smooth	Super.
1 to 3½	$1.85	$2.05	$2.70
4	1.95	2.30	3.10
4½	2.90	3.35	4.10
5	2.95	3.55	4.30
6	3.75	4.30	5.05
7	4.30	5.05	5.80
8	5.05	5.80	6.95
9	7.05	7.80	9.35
10	7.80	8.60	10.10
12	9.35	10.85	13.15

Taper Three-Square Files.

Inches.	Bast'd	Smooth	Super.
1 to 3	$1.65	$1.95	$2.15
3½	1.75	2.15	2.40
4	1.95	2.30	2.70
4½	2.80	3.15	3.75
5	2.95	3.55	4.10
6	3.35	3.90	4.85
7	3.90	4.70	5.80
8	5.05	5.80	6.60
9	7.05	7.80	9.35
10	7.80	8.60	10.10
12	10.10	10.85	13.15

Taper, Flat, Pillar and Cotter.

Inches.	Bast'd	Smooth	Super.
1 to 3	$1.85	$2.05	$2.70
3½	1.85	2.05	2.70
4	1.95	2.30	3.10
4½	2.90	3.35	4.10
5	2.95	3.55	4.30
6	3.75	4.30	5.05
7	4.30	5.05	5.80
8	5.05	5.80	6.60
9	7.05	7.80	8.60
10	7.80	8.60	9.35
12	9.35	10.10	12.40

Half Round, Round Edge Joint, and Flat Back Half Round.

Inches.	Bast'd.	Smooth.	Super.
1 to 3	$1.95	$2.15	$2.70
3½	2.15	2.40	2.90
4	2.50	2.70	3.25
4½	3.35	3.65	4.30
5	3.55	3.90	4.70
6	4.30	4.70	5.45
7	4.70	5.45	6.60
8	5.05	5.80	7.35
9	7.05	8.20	10.10
10	8.20	9.35	10.85
12	10.10	11.60	13.90

Round Files, Taper.

Inches.	Bast'd.	Smooth.	Super.
1 to 3	$1.75	$2.15	$2.70
3½	1.85	2.30	2.90
4	1.95	2.50	3.25
4½	2.80	3.35	4.30
5	2.95	3.55	4.70
6	3.35	4.30	5.80
7	3.90	5.05	6.95
8	5.05	5.80	7.35
9	7.05	8.20	10.10
10	7.80	9.35	10.85
12	9.35	11.60	13.90

Equalling Files.

Inches.	Bast'd	Smooth	Super.
1 to 2½	$1.75	$1.95	$2.50
3 & 3½	1.95	2.15	2.70
4	2.15	2.30	3.10
4½	2.95	3.35	4.10
5	3.15	3.55	4.30
6	3.55	4.30	5.05
7	3.90	4.70	5.80
8	4.70	5.80	6.95
9	6.70	7.80	9.35
10	7.80	8.60	10.10
12	10.10	10.85	13.15

Round Off Files.

5 inch Bastard.....$3.35
5-inch Smooth..... 3.75
5-inch " 4.10

Cant.

3	3½	4	4½	5	6
$2.50	2.70	2.90	3.75	3.90	4.70

Hollow-Edge Equalling Files.

Same as round edge joint except that the edges are concave instead of convex
Bastard, 3 inches $3.25

(*Price List of Stubs' Files continued on next page*)

PRICE LIST OF STUBS' FILES.—CONTINUED.

Crossing Files.

Inches.	Bast'd.	Smooth.	Super.
1 to 3	$2.25	$2.50	$2.90
3½	2.50	2.70	3.25
4	2.70	2.90	3.65
4½	3.05	3.90	4.75
5	3.75	4.30	5.05
6	4.70	5.05	5.80
7	5.45	6.20	7.35
8	5.85	6.90	8.30
9	7.00	8.05	10.35
10	8.10	10.10	11.60
12	11.60		

Warding Files.

Inches.	Bast'd.	Smooth.	Super.
1 to 3	$1.75	$1.95	$2.70
3½	1.75	1.95	2.70
4	1.95	2.25	2.90
4½	2.70	3.15	3.90
5	2.80	3.35	4.30
6	3.55	4.10	5.15
7	4.10	4.70	5.80
8	4.60	5.45	7.05

Blunt Round Files.

Inches.	⅛	¼	⅜	½	⅝
Bas.	$1.85	1.95	2.90	2.95	3.75
Smo	2.30	2.50	3.35	3.55	4.30

Slitting Files.

Inches.	Bast'd.	Smooth.	Super.
1½	$1.75	$1.95	$2.50
2	1.95	2.15	2.75
2½	2.35	2.55	2.90
3	2.55	2.90	3.65
3½	2.70	3.10	3.95
4	2.90	3.25	4.—
4½	3.75	4.20	5.25
5	3.90	4.35	5.45
6	4.70	5.25	6.45
8	6.20	7.35	8.55

Sq. Edge Joint Files.

4-inch, Bastard $2.15

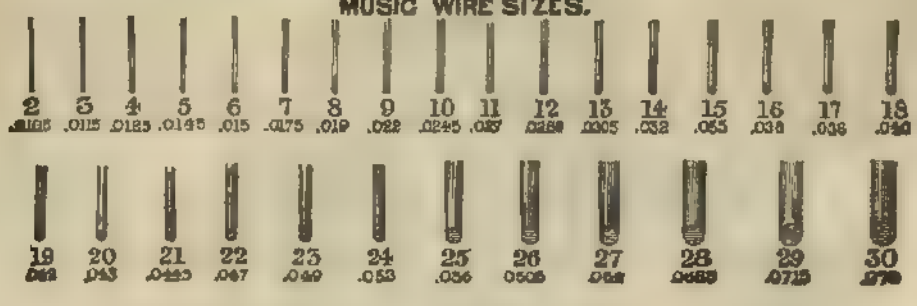
MUSIC WIRE.

(LABEL.)

This Wire is not only used by piano-forte makers, but by the sewing machine and other manufacturers who desire to get a first-class spring without tempering. On account of its peculiar process of manufacture, it is rendered very tough and springy, and is ready for use as soon as wound. It comes in packages of one pound each.

Nos. 00.	per lb	$0.75
" 0.	"	0.75
" 1	"	5.00
" 2	"	4.70
" 3	"	4.15
" 4	"	3.25
" 5	"	2.05
" 6	"	1.55
" 7	"	1.25
" 8	"	1.20
" 9	"	1.10
" 10 to 36	"	1.00

MUSIC WIRE SIZES.



FRENCH COLD ROLLED SHEET STEEL.

Celebrated for its toughness and superior quality for striking up in die or press-work. We carry in stock from 4 to 65 thousandths thick by the micrometer measure. Width 3¼ inches.

Thickness by thousandths,	4 and 5	6 and 7	8 to 10	11 to 19	20 and larger,
Per lb	$2.50	2.00	1.25	.90	.85

F. L. GROBET'S FILES.

BEWARE OF IMITATIONS.

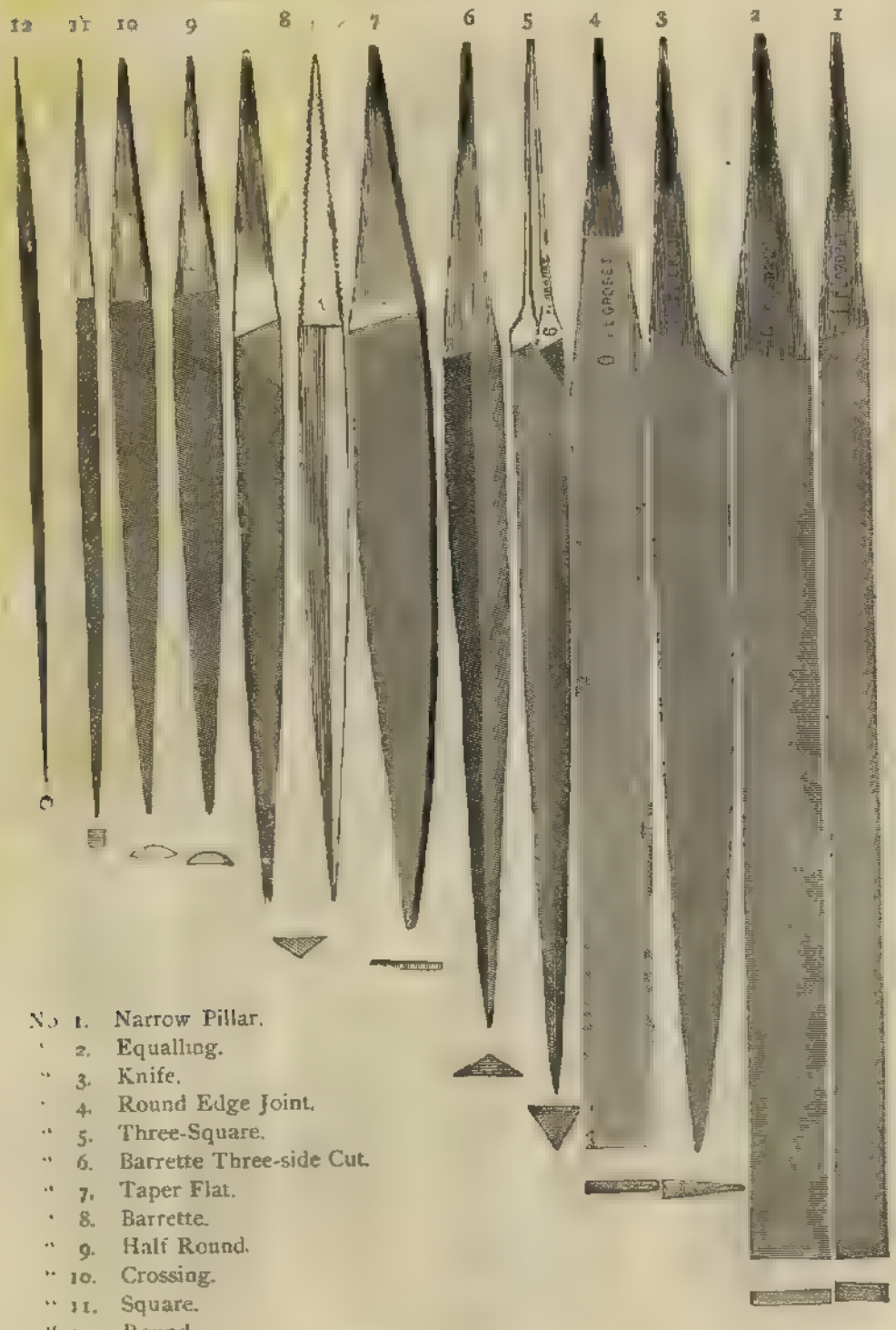
F.L.GROBET.

See that all the Swiss Files you buy are stamped with the Rabbit Trade Mark.

The above illustrations of the different cuts (Nos 0 to 6) are shown more especially to assist the purchaser in making proper selections as to the grades of coarseness desired to suit the work

Why are there so many files on the market which are "just as good as the Grobet?"

F. L. GROBET'S FILES.



No. 1. Narrow Pillar.
" 2. Equalling.
" 3. Knife.
" 4. Round Edge Joint.
" 5. Three-Square.
" 6. Barrette Three-side Cut.
" 7. Taper Flat.
" 8. Barrette.
" 9. Half Round.
" 10. Crossing.
" 11. Square.
" 12. Round.

PRICE LIST GROBET SWISS FILES.

DESCRIPTION.	2 in.	2½ in.	3 in.	3½ in.	3¾ in.	4 in.	4½ in.	5 in.	6 in.	7 in.	8 in.	10 in.	12 in.	14 in.
Hand No. 00 and 0			$1.70	$1.80	$1.85	$2.15	$2.60	$2.90	$3.15	$3.65	$3.85	$4.85	$7.95	$8.80	$11.75
" " 1			1.70	1.80	1.85	2.15	2.60	2.90	3.20	3.65	3.85	4.85	7.95	8.80	11.75
" " 2			1.70	1.80	1.85	2.15	2.60	2.90	3.20	3.65	3.85	4.85	7.95	9.20	11.75
" " 3			1.70	1.80	1.95	2.15	2.65	2.90	3.20	3.65	3.85	4.85	7.95	9.60	12.25
" " 4			1.90	1.90	1.95	2.20	2.75	2.95	3.35	3.90	4.25	5.20	8.45	10.30	12.25
" " 5			1.90	1.90	2.10	2.40	2.90	3.10	3.40	4.00	4.35	6.00	9.75	10.60	
" " 6			2.25	2.25	2.35	2.75	3.10	3.30	3.65	4.60	5.10	6.80	9.50	11.35	
" " 8			2.50	2.50	2.75	2.80	3.40	3.60	3.80	5.05	6.40	7.00	10.30	14.25	
Pillar and Narrow Pillar, one or two Safe Edges, No. 00 and 0	$1.65	1.70	1.80	1.80	1.85	2.00	2.60	2.72	3.05	3.25	3.50	4.70	7.45		
" " 1	1.65	1.70	1.70	1.80	1.85	2.00	2.60	2.72	3.05	3.25	3.50	4.70	7.95		
" " 2	1.65	1.70	1.70	1.80	1.90	2.00	2.60	2.72	3.05	3.25	3.50	4.70	7.95		
" " 3	1.65	1.70	1.70	1.90	1.90	2.00	2.60	2.72	3.10	3.30	3.75	4.70	8.55		
" " 4	1.65	1.70	1.70	1.90	2.00	2.30	2.60	2.72	3.10	3.30	3.75	5.20	8.90		
" " 5	1.65	1.70	1.70	1.90	2.05	2.30	2.70	2.80	3.20	3.45	3.90	4.80	9.20		
" " 6	1.65	1.70	1.75	1.95	2.10	2.30	2.70	2.80	3.20	3.45	4.30	4.80	9.40		
" " 8	1.65	1.70	1.75	1.95	2.10	2.30	2.70	2.80	3.20	3.45	4.30	4.85			
Half Round	1.70	1.70	1.70	1.80	2.00	2.30	2.90	3.35	3.40	3.95	4.10	5.35			
Barrette	1.70	1.70	1.70	1.80	2.00	2.32	2.72	2.90	3.25	3.95	4.60	5.35	8.75	11.00	12.00
Square	1.70	1.70	1.70	1.80	2.00	2.30	2.60	2.90	3.20	3.60	4.60	5.25	8.00		
Round	1.30	1.40	1.40	1.40	1.55	1.80	2.05	2.30	2.40	2.75	3.65	4.55	6.25	7.98	8.75
Crossing	1.15	1.15	1.15	1.15	1.40	1.60	2.00	2.10	2.70	2.70	3.50	4.25	6.40	7.60	9.75
Equalling	1.70	1.70	1.70	1.80	2.00	2.25	2.72	2.90	3.25	3.95	4.60	5.35	8.75	11.00	12.00
Warding	1.70	1.70	1.70	1.80	2.00	2.30	2.65	2.90	3.25	3.95	4.60	5.35	8.75		
Taper Flat	1.70	1.70	1.70	1.80	2.00	2.25	2.72	2.90	3.25	3.95	4.60	5.40	8.75		
Knife, Single Cut	1.70	1.70	1.70	1.80	2.00	2.30	2.72	2.90	3.25	3.95	4.60	5.40	8.75		
" Double Cut	1.85	1.85	1.85	1.95	2.10	2.40	2.78	2.90	3.25	3.95	4.60	5.40	8.75		
Taper or Blunt, Three Square	1.85	1.85	1.85	1.95	2.10	2.40	3.00	3.30	3.60	4.25	4.90	5.85			
" " " " " Slim	1.85	1.85	1.85	1.95	2.10	2.40	2.90	2.95	3.10	3.15	4.10	4.85			
Three Square, Single Cut or Taper Saw	1.05	1.05	1.75	1.85	2.05	2.40	2.90	2.95	3.10	3.45	4.15	4.85			
" " " " " Slim			1.75	1.85	2.05	2.40	2.75	2.80	2.90	3.25	4.05	4.85			
Cant or Barrette, three sides cut			1.75	1.85	2.05	2.40	2.75	2.80	2.90	3.25	3.95	4.65			
Round Edge Joint			1.95	2.10	2.40	2.80	3.30	3.60	4.00	4.60					
Parallel Round			1.50	1.60	1.80	2.05	2.20	2.50	2.80	3.25					
Screw Head or Slitting, with tang	.95	.95	1.20	1.20	1.40	1.65	2.20	2.50	2.70	3.15					
" " " without tang	1.70	1.70	1.70	1.80	2.05	2.35	2.60								
Crochet and Pippin	1.60	.70	1.70	1.80	1.95	2.25									
Pivot, Right or Left			1.60	1.70	1.80	2.15	2.40	3.00	3.15	3.60					
	2.40														

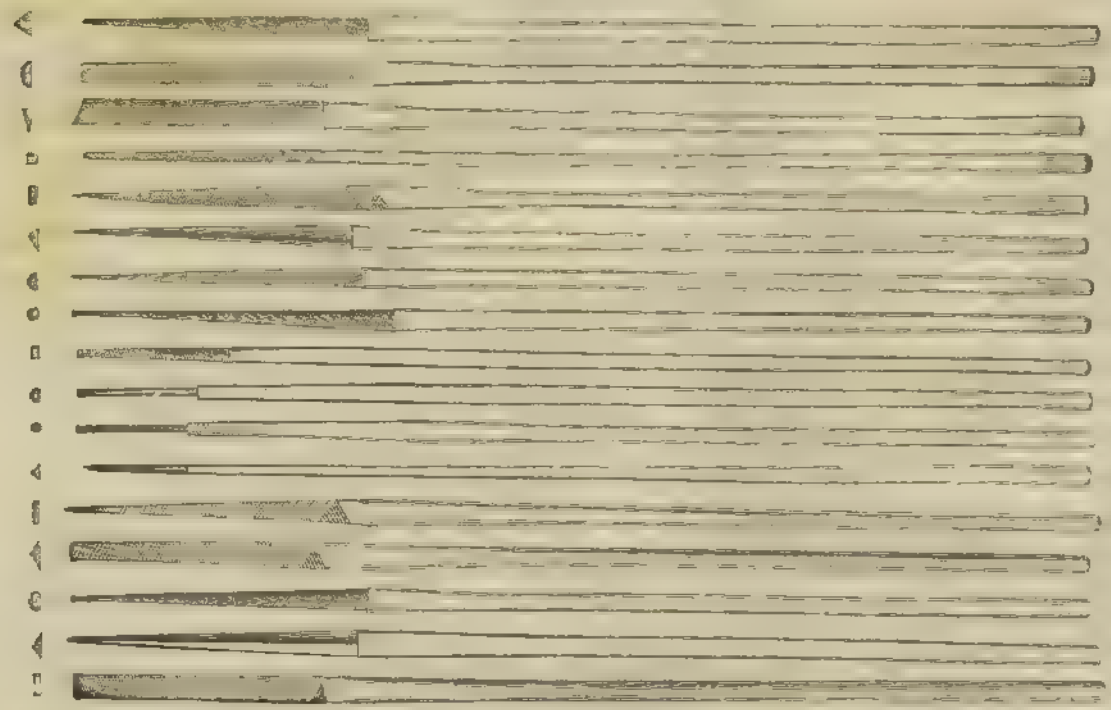
All Warding and Equalling Files are Double Cut, thickness stamped on tang according to Stubs' Gauge; Gauges carried in stock as follows:

	3 inch.	3½ inch.	4 inch.	4½ inch.	5 inch.	6 inch.	8 inch.
Warding	20 to 24	18 to 22	16 to 20	15 to 18	14 to 18	12 to 16	8 to 12 Gauge.
Equalling	24 to 30	20 to 24	16 to 20		14 to 18	12 to 16	"
Round Edge Joint		18 to 24	16 to 20		13 to 16	10 to 14	"

GROBET DIE SINKERS' FILES.

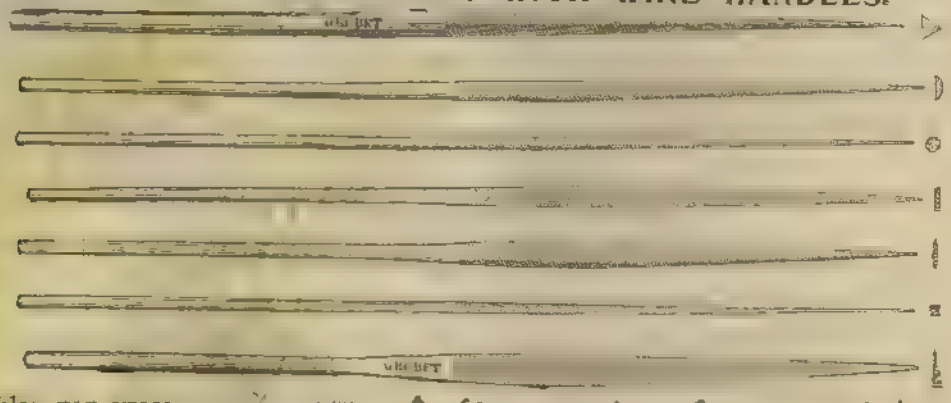
The above contains 12 files of different shapes to a set. No mechanic should be without a set, as there are no two alike, and all are of very peculiar shapes, which make them valuable for any style of work. Per set..... $1.80

ESCAPEMENT FILES.



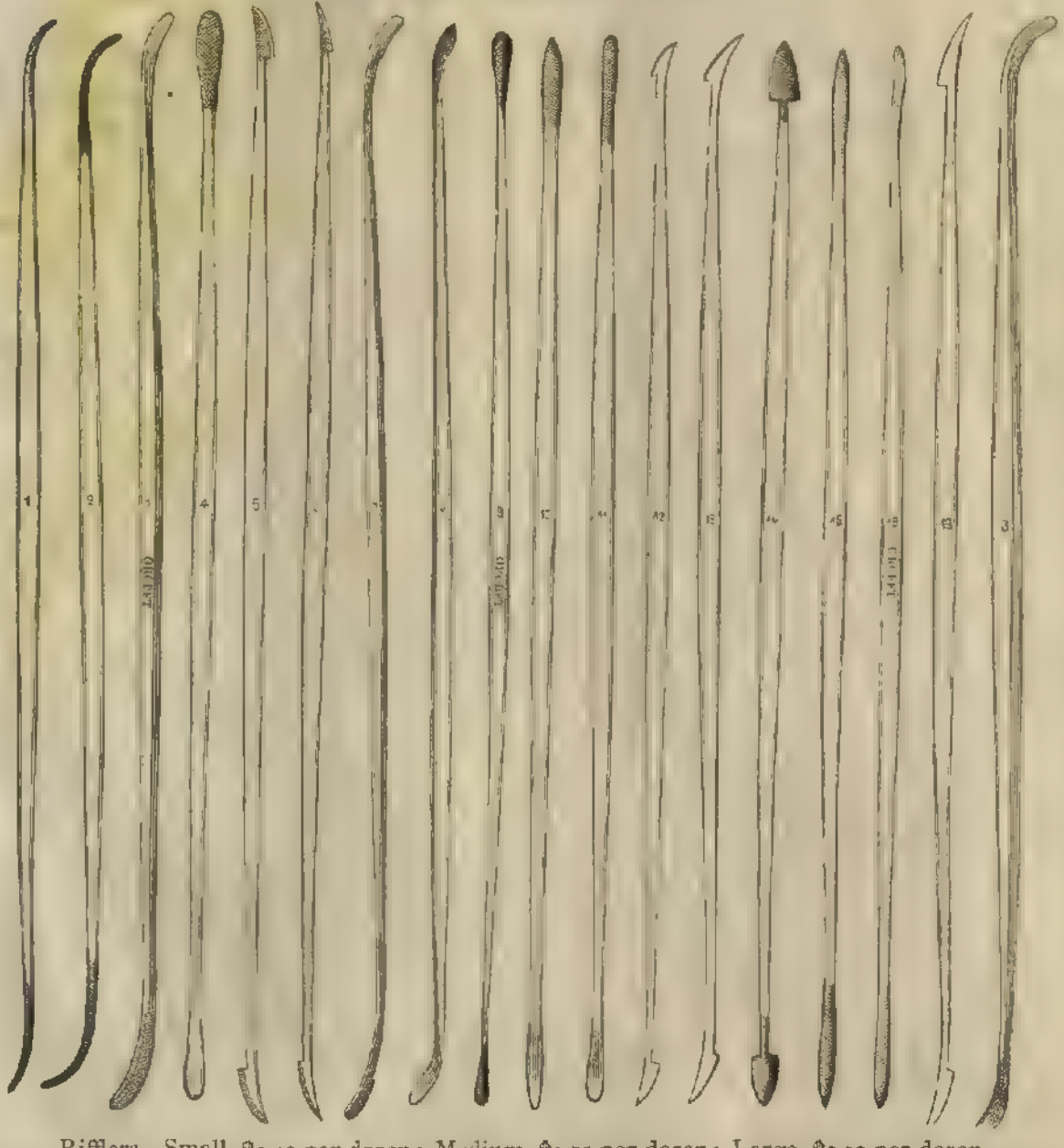
Escapement Files, Round.....per dozen, $1 15
" " Square..... " 1 30
" " all other shapes..... " 1.60

GROBET NEEDLE FILES WITH WIRE HANDLES.



Needle Files, per gross..... 12 c/m....$13.65 14 c/m....$14.75 16 c/m....$16.00

GROBET RIFFLE FILES.



Rifflers—Small, $2.40 per dozen; Medium, $2 75 per dozen; Large, $2 90 per dozen.
Nos. 1 to 17 are full size of Small. No. 3 at the right full size of Large. No. 15, next to right full size of Medium

GROBET PETITE RIFFLERS.

Made in 18 Shapes.

Very fine small patterns for the most delicate and intricate die work.

Per dozen. $2.75

GROBET SILVER RIFFLERS.

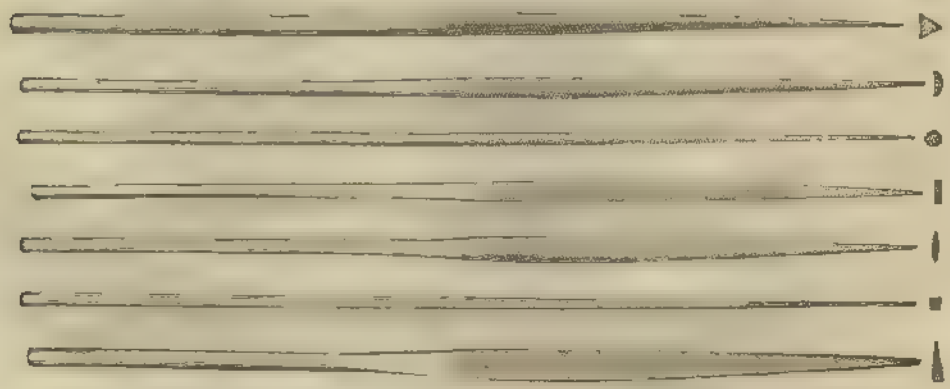
Nos. 1 to 10 comprise a set . . . . . per dozen, $3.25

GROBET DIE-MAKERS' RIFFLERS.

Made in 30 shapes. Nos. 1 to 30.

Size 7 inches (actual measure 7 ¼ inches)..... per dozen, $1.00, each, 35c.

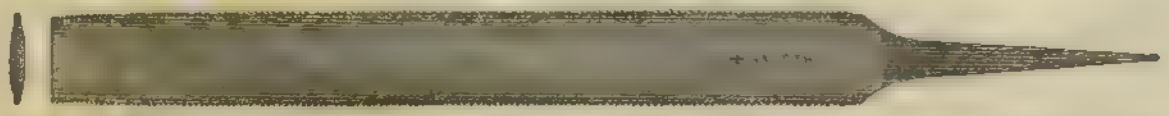
AMERICAN NEEDLE FILES, WITH WIRE HANDLES.



File Cut	10	12	14	16 c/m.
Per Gross	2⅛ in.	2⅜ in.	2¾ in.	3¼ in.
Per Dozen	$6.00	$7.00	$8.00	$9.00
	.55	.65	.75	.85

The above Needle Files are not so good as the Grobet, but compare with the imported in the same ratio as other American files do with imported files. They are used extensively in large factories among the class of workmen who are too careless to provide the higher priced file.

VAUTIER'S JOINT FILES.



Length, 5 inches ..... Per Dozen, $2.25
" 6 " ..... " 2.50

ROUND EDGE JOINT FILES.

4 inches.

Thickness by Stubs' Gauge..... No. 14 x 15, No. 16 to 24
Per Dozen $1.55 $1.40

STRAIGHT ROUND JOINT FILES.

These files are mostly used by pencil case makers to clean out the roughness of inside of pencil tubes. The diameters are taken by Stubs' Steel Rod Wire or Drill Gauge.

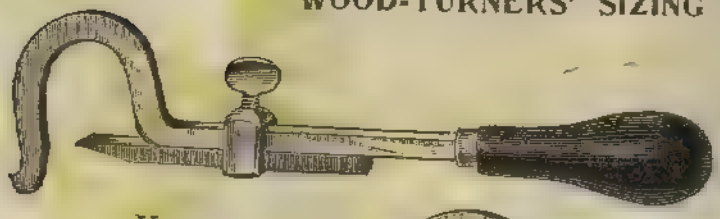
Size, up to 29..... Per Dozen, $1.30
Nos. 30 to 55..... " 1.10

FRENCH RIFFLE FILES AND RASPS.

"Goldenberg."

	6	7	8	9	10 inch.
Half Smooth ..... per doz.,	$4.20	4.40	4.80	5.40	6.00
Smooth ..... "	4.40	4.80	5.20	6.00	6.80

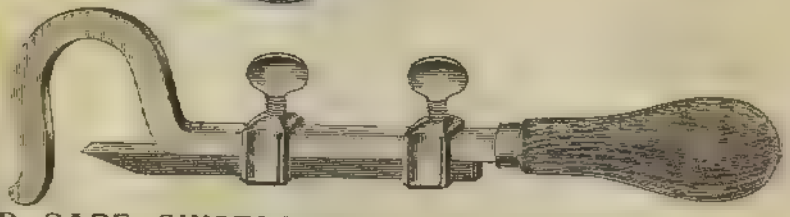
WOOD-TURNERS' SIZING CHISELS.



Smaller Size, with One Slide,
Per dozen.....$18.00
Each..... 1.00

Heavy.

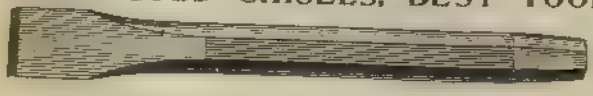
Capacity.	Per Dozen	Each
3 inch.....	$22.00	$1.25
4 "	23.00	1 30
5 "	24 00	1 35
6 "	25.00	1.40



FULTON BRAND CAPE CHISELS. BEST TOOL STEEL.

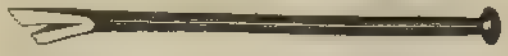
Thickness of Shank.....	1/16	3/8	1/2	5/8	3/4	7/8	1 inch.
Per dozen.....	$2.25	3.00	3.75	4.50	5.25	6.75	9.00
Each.....	.15	.18	.22	.25	.30	.40	.50

FULTON BRAND COLD CHISELS. BEST TOOL STEEL.



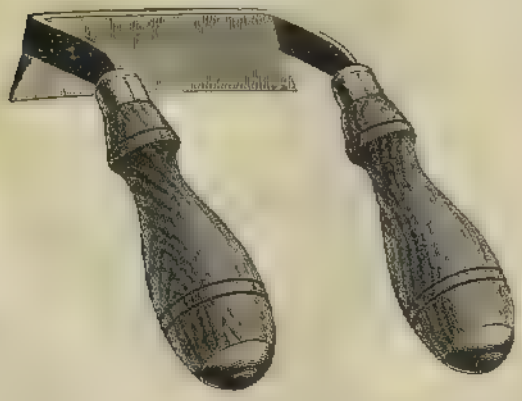
Thickness of Shank.....to	1/16	3/8	1/2	5/8	3/4	7/8	1 inch.
Per dozen.....	$2.25	3.00	3.75	4.50	5.25	6.75	9.00
Each.....	.15	.18	.22	.25	.30	.40	.50

BOX CHISELS.



Round, Steel Faced, Black.

Length.....	8	10	12	14 inch
Per dozen.....	$4.00	4.60	5.00	6.00



BOX SCRAPERS.

These Box Scrapers are made from Selected Cast Steel, and fully warranted. The tang runs through the handle and is riveted, thus making a strong and practical tool which will be appreciated by those who are looking for the best article in the market.

Each..... 75 cents.

CHASERS FOR SCREWS.

Threads from 6 to 16	Per pair,	$0.60	Each,	$0.30
" " 17 to 50.....	"	.50	"	.25

No. 77.

FAY'S PATENT SPRING DIVIDERS.

With Spring Nut.

The cut represents The Fay Spring Dividers with new quick-adjusting automatic closing spring nut, a critical examination of which will at once show its superiority over all others on the market. Its use will save much valuable time in opening and closing spring bow calipers and dividers.

They are also made with a solid nut.

	Solid Nut.	Spring Nut.
2½ inch	$1.00	
3 "	1.00	
4 "	1.25	$1.40
5 "	1.25	1.40
6 "	1.50	1.75

Spring Nut, to fit all sizes above three inch.

No. 75.

FAY'S PATENT SPRING CALIPERS.

With Spring Nut.

OUTSIDE.

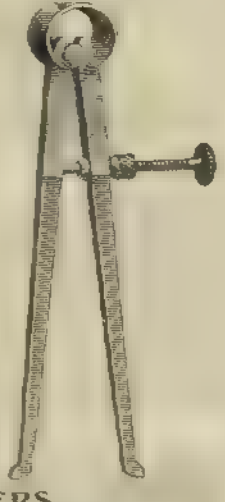
	Solid Nut.	Spring Nut.
2½ inch	$1.00	
3 "	1.00	
4 "	1.10	$1.25
5 "	1.10	1.25
6 "	1.35	1.50

INSIDE.

4 inch	Solid Nut,	$1.10
5 "	"	1.10

The Inside Calipers are not made to receive the Spring Nut.

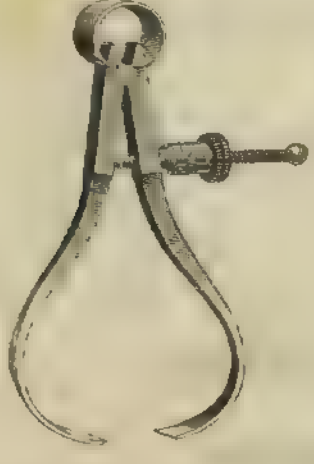
No. 78.



FAY'S PATENT THREAD AND INSIDE CALIPERS.

With Spring Nut.

No. 76.



No. 74.

No. 74 represents New Inside Transfer Caliper with either solid or spring nut. The bow is stiff making the Caliper reliable. After calipering inside a chambered cavity by pressing the legs together they may be withdrawn, and as they spring back will show exact size calipered.

Duplicate Parts for either style or size of Fay Caliper or Divider will be forwarded to any address.

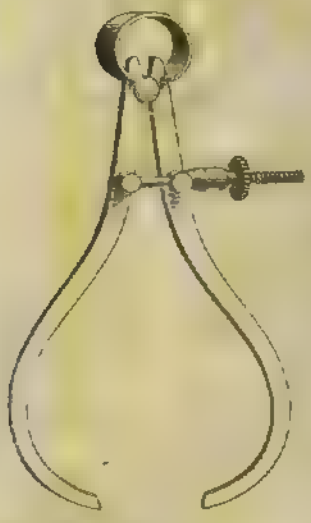
Screw and Ball	$0.15
Thumb Attachment	.15
Solid Nut	.10
Spring Nut	.25
Leg	.35
Spring	.25
Jam Washer	.10
Fulcrum Stud	.10

	Solid Nut.	Spring Nut.
3 inch	$1.00	
4 "	1.10	$1.25
5 "	1.10	1.25

	Solid Nut.	Spring Nut.
3 inch	$1.00	
4 "	1.10	$1.25
5 "	1.10	1.25
6 "	1.35	1.50

YANKEE OUTSIDE AND INSIDE CALIPERS.

No. 79.



The Yankee Calipers and Dividers are manufactured under the Fay patent, are not quite so heavy as the Fay, and cost less. They are much liked, and on account of price are by many preferred to the higher cost tools. They are supplied with either solid or quick-adjusting nut.

No. 73 represents a new Yankee Inside Transfer Caliper with either spring or solid nut. The bow is stiff making the Caliper reliable. After calipering inside of chambered cavity by springing in the legs they may be withdrawn, and as they spring back will show the exact size calipered. Three sizes are made, 4, 5 and 6 in., price same as outside.

Solid Nut—Size....	2½	3		4 inch.
Each...	$0.65	.70		.75
Size....	5	6		8 inch.
Each...	$0.80	.85		1.00
Spring Nut—Size....	4	5	6	8 inch.
Each..	$1.00	1.05	1.10	1.25

No. 73.

No. 83.

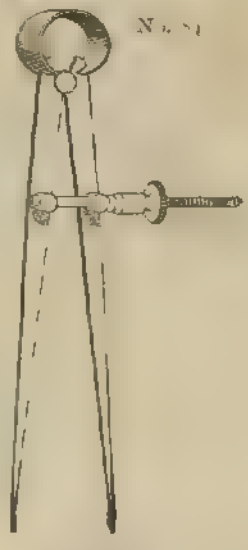
YANKEE SPRING DIVIDERS.

Furnished with spring nut, when ordered, at an extra cost of 25 cents each.

2½ inches.....	$0.65	With thumb attachm't,	$0.80
3 "	.70	" " "	.85
4 "	.75	" " "	.90
5 "	.80	" " "	.95
6 "	.85	" " "	1.00
8 "	1.00	" " "	1.25

Extra parts for "Yankee" same price as the Fay's.

No. 81.



No. 8

Inside Caliper.

YANKEE INSIDE AND KEYHOLE CALIPERS.

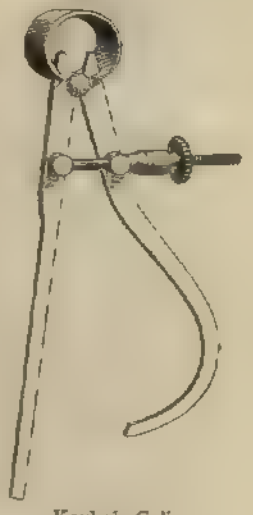
Inside Calipers.

4 inches, solid nut	$0.75
5 " "	.80
6 " "	.85

Keyhole Calipers.

3 inches, solid nut.....	$0.70
4 " "	.75

No. 82



Keyhole Caliper.

STARRETT'S IMPROVED FIRM-JOINT CALIPERS.

Prices of Nos. 26 and 27.

3	inch	$0 40
4	"	.50
5	"	.55
6	"	.65
8	"	.80
10	"	.90
12	"	1 00
14	"	1 [illegible]
16	"	1 75
18	"	2 [illegible]
20	"	2 50
24	"	3 [illegible]

The above sizes refer to the *length* of the Calipers.

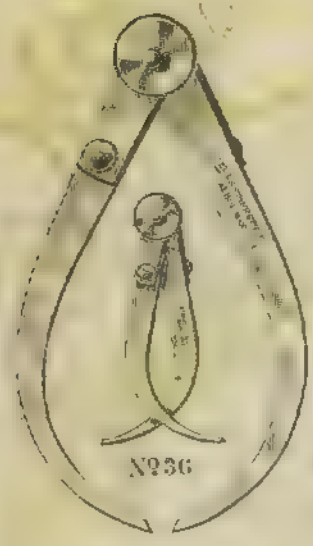
Their capacity is about one-third greater than the size given.

Prices of No. 41.

3	inch	$0.40
4	"	.50
5	"	55
6	"	.65
8	"	.80
10	"	90
12	"	1 00

These Calipers have an adjustable point, as well as improved firm joint.

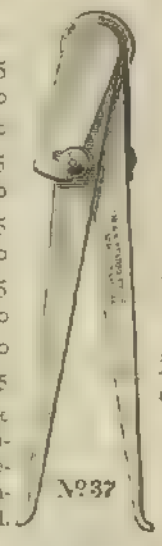
STARRETT'S LOCK-JOINT TRANSFER CALIPERS.



Prices of Nos. 36 and 37

4	inch	$1 25
5	"	1 40
6	"	1 50
8	"	1 75
10	"	2 00
12	"	2 25
14	"	2 50
16	"	2 75
18	"	3 00
20	"	3 50
24	"	4 25

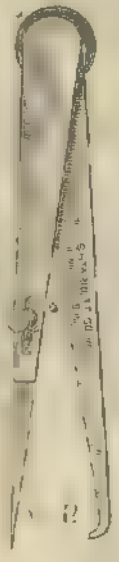
These Calipers may be used in [illegible] cavities, [illegible] are removed and replaced without losing the size caliphered.



Prices of No. 42.

4	inch	$0 90
6	"	1 00
8	"	1 25
10	"	1 50

These Calipers have adjustable point, lock-joint and sensitive adjustment.



STARRETT'S LOCK-JOINT.

Prices of Nos. 38 and 39.

4	inch	$0.90
6	"	1.00
8	"	1.25
10	"	1.50
12	"	1.75
14	"	2 00
16	"	2 25
18	"	2.50
20	"	2.75
24	"	3.50

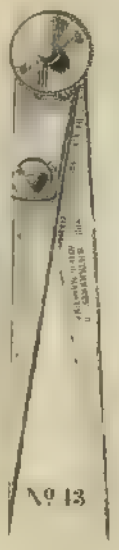
The lock-joint consists of a socket joint made tapering, and locked or released by a partial turn of the nurled disc. A spring washer under the disc maintains an easy friction in the joint when unlocked.

The nurled screw on side adjusts legs when joint is locked

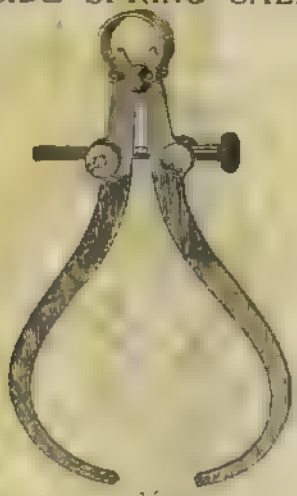
Prices of No. 43

6	inch	$1.00
8	"	1 25
10	"	1 50

With improved lock-joint attachment and sensitive adjustment. It is light and stiff, with large capacity, instantly opened, closed and locked. The points are nicely tempered.



STANDARD OUTSIDE SPRING CALIPERS.

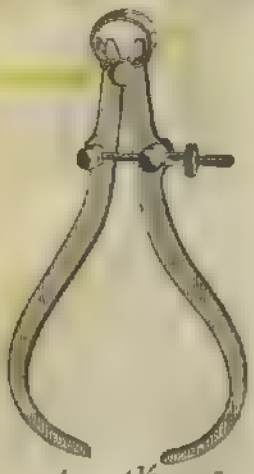


Inches	4	4½	5	6	8
	$1.25	1.25	1.25	1.50	1.50

STANDARD INSIDE SPRING CALIPERS.

Inches	5	6
	$1.25	1.50

"BOSS" OUTSIDE SPRING CALIPERS.

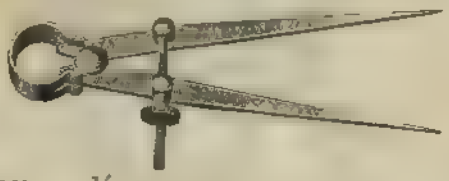


Inches	3	4	4½	5	6	8
	$0.70	.75	.80	.80	.85	1.00

"BOSS" INSIDE SPRING CALIPERS.

Inches	5	6	With Set Screw,
	80c.	85c.	15c. extra.

"BOSS" SPRING DIVIDERS.

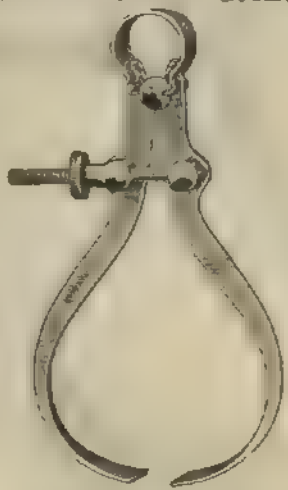


Inches	2½	3	4	5	6
Each	$0.65	.70	.75	.80	.85

With Thumb Attachment.

Inches	2½	3	4	5	6
Each	$0.80	.85	.90	.95	1.00

"BOSS" THREAD CALIPERS.



Inches	3	4	5
	$0.75	.90	1

SPRING DIVIDERS.

Stevens' Standard, No. 53.

With Thumb Attachment and Patent Washer. An invaluable Tool for Draughtsmen and Machinists

2 in	$1.15
3½ "	1.15
4 "	1.30
5 "	1.50
6 "	1.75

PATENT.

Would it not be a good idea when you are obliged to buy tools to get the best made at a fair price, rather than purchase several pairs of cheap ones of inferior make which soon give out. It is the cheapest in the long run.

PATENT HELICAL COIL SPRING CALIPERS.

Stevens' Helical, No. 54.

1 in	.75c.
1½ "	.75c.
2 "	.40c.
2½ "	.40c.
3 "	.40c.
4 "	.50c.
5 "	.50c.

The 1 and 1½ are used for Charms on Watch Guards, etc

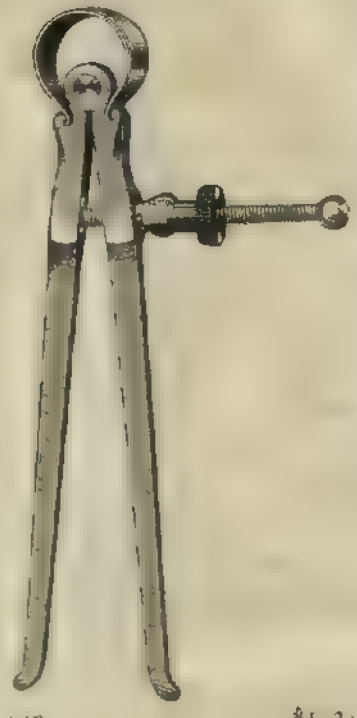
PRICE OF PARTS

for Tools Nos. 47, 48, 49, 50, 52, 53, 54.

Screw	10c
Solid Nut	15c
Washer	5c.

PATENT SPRING INSIDE CALIPERS.

Stevens' Ideal, No. 65.



4 in	$1.25
5 "	1.25

NEW SIZES ADDED:

3 in	$1.00
6 "	1.50

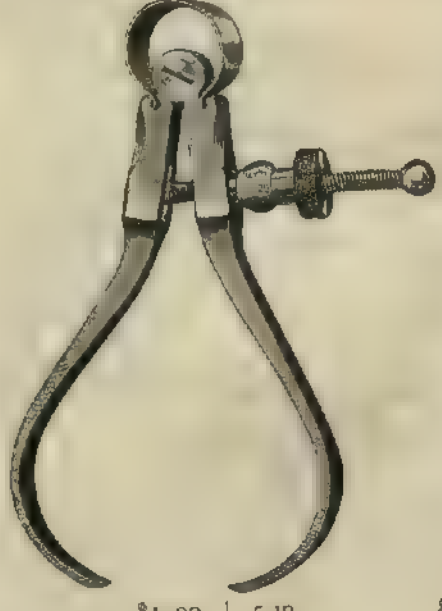
PATENT SPRING CALIPERS.

Stevens' Ideal, No. 63.

2½ in	$1.00	5 in	$1.25
3 "	1.00	6 "	1.50
4 "	1.25		

SPRING SCREW THREAD CALIPERS.

Stevens' Ideal, No. 64.



3 in $1.00 | 5 in $1.25

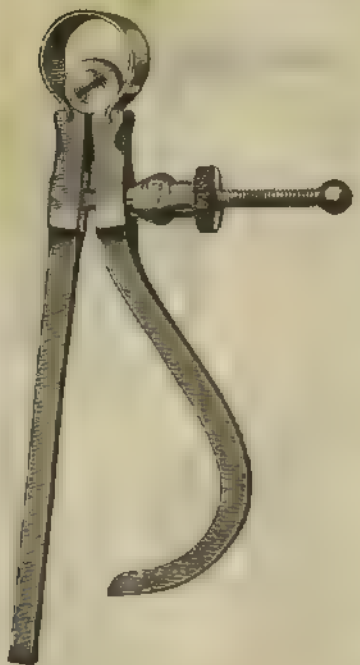
PATENT SPRING DIVIDERS.

Stevens' Ideal, No. 66.

3 in. $1.00
4 " 1.25
5 " 1.25
6 " 1.50

PATENT SPRING KEY-HOLE CALIPERS

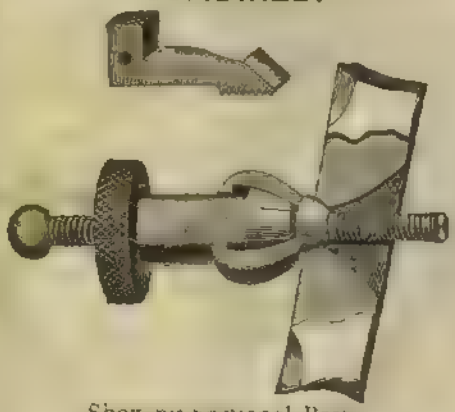
Stevens' Ideal, No. 68.



3 in. $1.15
4 " 1.50

Diagram of the Stevens' Ideal

PATENT NUT AND WASHER COMBINED.

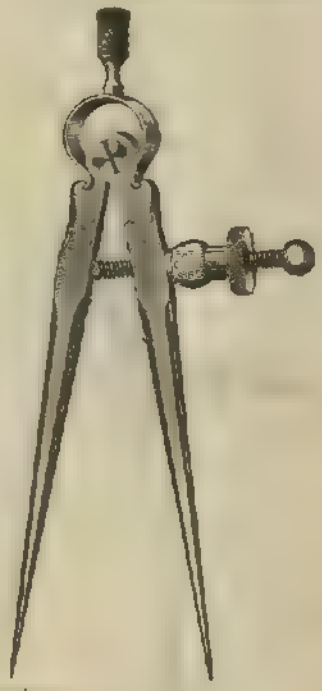


Showing Sectional Parts

PATENT SPRING DIVIDERS.

Stevens' Ideal, No. 67.

With Thumb Attachment.



Inches	3	4	5	6
	$1	1.40	1.50	1.75

DUPLICATE PARTS.

Leg (either one) 35c
Spring 25c
Joint Stud 25
Screw 10c
Tip for Screw 10
Ideal Nut 25c
Hood for Ideal Nut 10c
Washer " " 05c
Thumb Attachment 15c
Solid Nut ..... 15c.
Joint Screw (on first model) 10c
All parts are interchangeable.

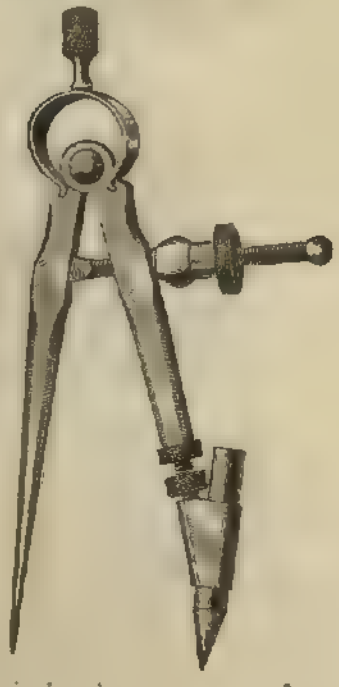
PATENT SPRING INSIDE CALIPERS.

Stevens' Leader, No. 72.

Inches....	4	5	6
	75c.	80c.	85c.

PENCIL DIVIDERS.

Stevens' Ideal, No. 69.

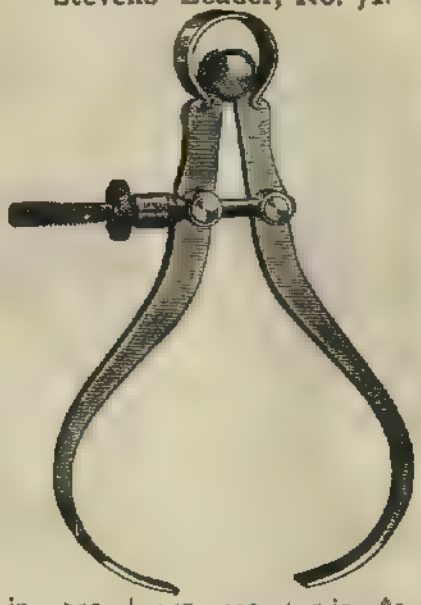


3 inch only $1.75

PATENT SPRING CALIPERS.
Stevens' Leader, No. 70.

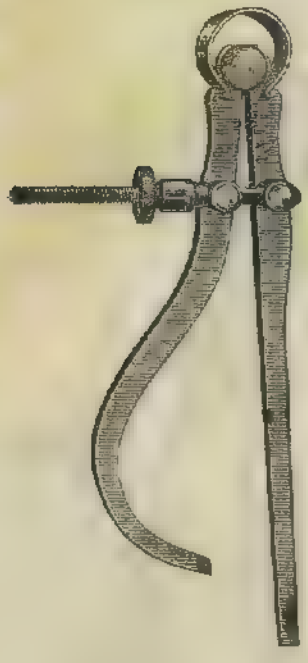
Inches..	2½	3	4	5	6	8
	$0.65	.70	.75	.80	.85	1.00

PATENT SPRING SCREW THREAD CALIPERS.
Stevens' Leader, No. 71.



3 in...75c. | 4 in..90c. | 5 in..$1.00

PATENT SPRING KEY-HOLE CALIPERS
Stevens' Leader, No. 73.



Inches.....	3	4
	70c.	75c.

PATENT SPRING DIVIDERS.
Stevens' Leader, No. 74.

Inches..	2½	3	4
	$0.65	.70	.75
Inches..	5	6	8
	$0.80	.85	1.10

PATENT SPRING DIVIDERS.
Stevens' Leader, No. 75.

With Thumb Attachment.

Inches..	2½	3	4
	$0.80	.85	.90
Inches..	5	6	8
	$0.95	1.00	1.25

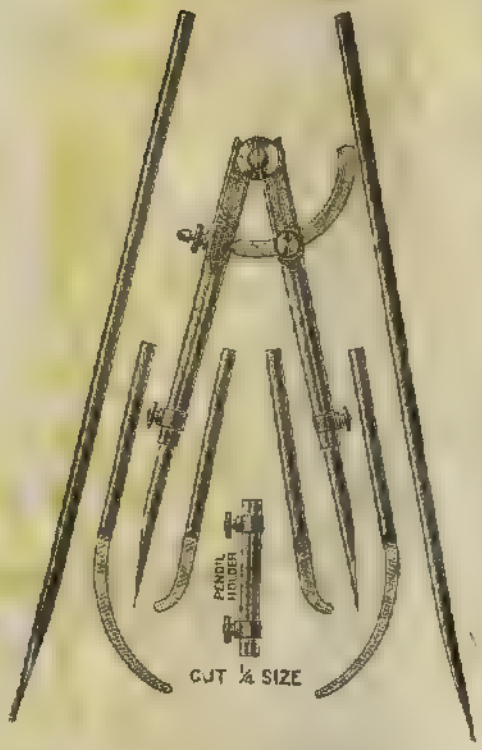
LEADER DUPLICATE PARTS.

Leg (either one).....25c.	Ideal Patent Nut.....25c.
Spring.....25c.	Hood for Ideal Nut.....10c.
Joint Stud.....25c.	Washer " " .....05c.
Screw.....10c.	Thumb Attachment.....15c.
Solid Nut .....15c.	Screw Tip for Ideal Nut .....10c.
Washer.....10c.	Screw Stud.....10c.

All parts are interchangeable.

PATENT IDEAL
COMBINED OUTSIDE AND INSIDE CALIPER AND DIVIDER.

Stevens' Ideal. No. 62.



An extremely useful combination tool which is made from brass specially made for this tool. It is very finely finished and is intended for the use of carpenters and like trades. It serves at once as a pair of dividers of ordinary size, as dividers with very long legs, and as calipers. It consists of a pair of hinged divider legs swinging on an arc slide with screw adjustment. Two screws are provided, by which it can be regulated to any width. One pair of divider points is 5½ inches long and the other 14 inches. With the larger pair of divider legs a circle four feet in diameter may be struck. When fitted with the small points the ends may be reversed, protecting the points from injury and adapting the tool for convenient carriage in the pocket or tool box. A pair of caliper legs fits the same stock, their length being such that they will caliper 16 inches, making the tool useful for turning pulleys and other similar work where large calipers are required.

This tool has been greatly improved of late in the following ways:—It has been made lighter and stronger. We have added to it our Ideal Caliper and Divider Joint, thus assuring great rigidity and even tension. The New Wing Adjusting Nut we consider by far the best used for that purpose, which combined with the Locking Nut on the Outside insures the Divider from following the grain of the wood in scribing a circle. The Binding Attachment by which the legs are held is very positive. The form of the Divider legs has been changed by beveling them on one side, which allows the points to come close together.

Have also added to this already indispensable tool a pair of Inside Caliper Legs which can be used for inside work, or one of such legs combined with a short Divider leg makes the tool into a Hermaphrodite Caliper. A Pencil Holder is sent out with each set which can be placed on straight end of Divider leg, thus converting the tool into a drawing instrument

For Complete Set, all Nickel.....$4.00
Divider Legs, both long and short, each..... $0.25
Outside or inside Caliper Legs, each..... .25
Pencil Holder..... .50

This admirable device is packed suitable for transmission by mail for 25 cents.

OUTSIDE FIRM JOINT CALIPERS.

Stevens' Firm Joint,
No. 56A.

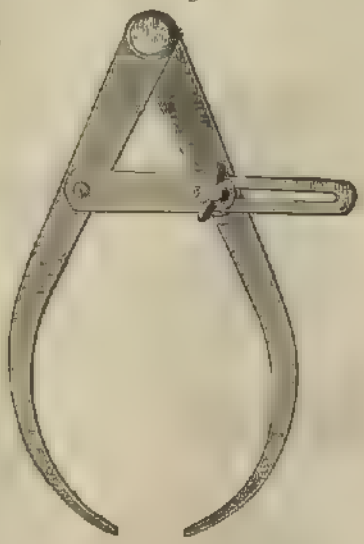
BEST QUALITY.

Made of very fine quality of Steel. All highly polished.

Inches..	3	4	5	6
	$0.35	.45	.55	.65
Inches..	8	10		12
	$0.75	.85		1.00

OUTSIDE WING FIRM JOINT CALIPERS.

Stevens' Firm Joint,
No. 56B



WITH WING AND SET SCREW.

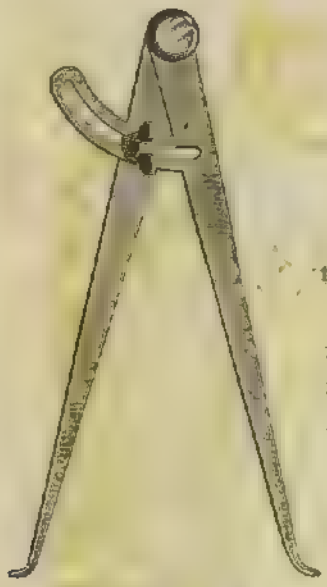
Inches..	8	10	12	14
	$1.00	1.10	1.25	1.50
Inches.	16	18		20
	$1.75	2.10		2.50

INSIDE FIRM JOINT CALIPERS.

Stevens' Firm Joint,
No. 56C.

Same quality and polish as the Outside Firm Joint.

Inches.	3	4	5	6
	$0.35	.45	.55	.65
Inches..	8	10		12
	$0.75	.85		1.00



INSIDE WING FIRM CALIPERS.

Stevens' Firm Joint,

No. 56D.

WITH WING AND SET SCREW.

Same quality and polish as the Outside Wing Firm Joint.

8 in.	$1.00
10 "	1.10
12 "	1.25
14 "	1.50
16 "	1.75
18 "	2 10
20 "	2 50

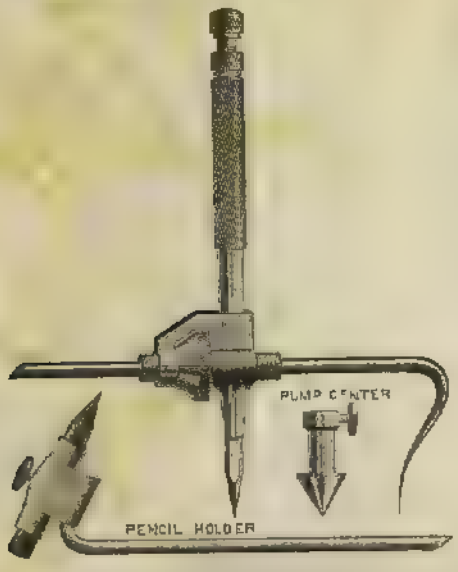
FIRM JOINT CALIPERS.

Stevens' Firm Joint,

No. 56E.

HERMAPHRODITE CALIPERS.

3 in	$0.35
4 "	.45
5 "	.55
6 "	.65
8 "	.75
10 "	.85
12 "	1.00



STEVENS' PARALLEL DIVIDERS, No. 110.

We do not claim this tool as a substitute for the ordinary divider so long in use by mechanics, it has a field of its own. In laying out work on a surface as it ordinarily comes from the planer it will be found invaluable, the point of pressure being directly over the stationary point of tool. With ordinary care there will be no trouble with the tool jumping from center punch mark.

Everything being so rigid and compact about it there is no tendency for the marking point to follow any irregularities there may be on the surface being laid out.

It is very easy to set, the needle being graduated to fractions of an inch, and by means of micrometer device the tool may be moved to a thousandth of an inch.

It can be used with pencil and pen if desired.

A Pump Center can be furnished with tool, by means of which a circle can be scribed on work laid out around a drilled hole, or bushing in a drill jig or other simular work.

The marking parts are made of the best of tool steel and points carefully hardened. Regular size will draw 7 inch circle.

Each $1.50

Long Bar, 24 in. circle..50c. | Pump Center 25c

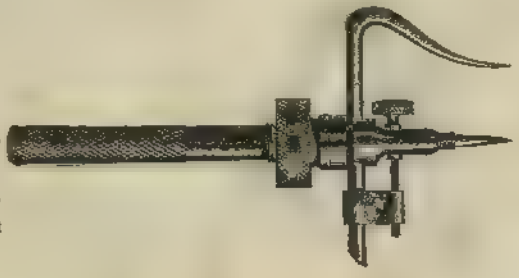
Lead Pencil Holder.....50c.

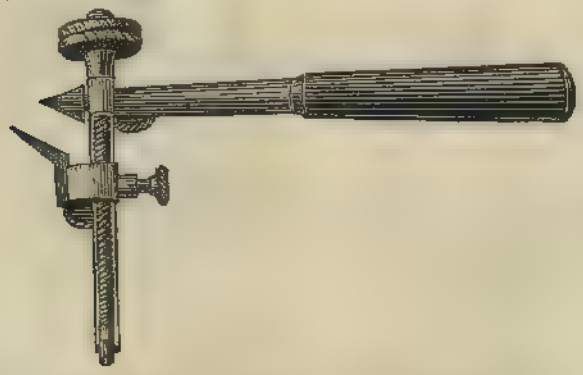
KIDD'S IMPROVED DIVIDERS.

It is very rigid, easily adjusted, and can be used with pen or pencil if desired. The points, being parallel and vertical, are indispensable for cutting circles in soft brass for models. Each.....$1.50

Long Bar for 24 in. circle, 50c. | Lead Pencil Holder, 50c.

Regular size will draw 7 inch circle. Extra length bars to order.



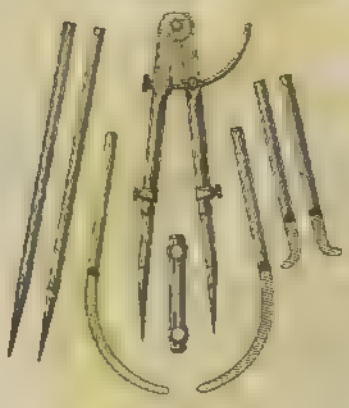


PUMP DIVIDERS.

Each.....$1.00

STARRETT'S IMPROVED BRONZE DIVIDERS.

No. 90.



The head and socket legs of this tool are made from drawn (not cast) Bronze metal, and are hard, tough, strong, and finely finished.

The joint is large and firm. The patent locking nut between the arms, against which a spiral spring acts, is a valuable feature. After the fine adjustment is made, the nut may be turned back, locking spring and arms firmly, thus remedying the weak point in the common wing divider, which is only as stiff as the adjusting spring. The quadrant is fastened by an improved method.

A common pencil fits either socketed leg, while an auxiliary holder fits reversed end of either short point for an extension. The head, with short point, is 8 inches long; may be extended 2 inches more; will caliper 10 inches outside and 12½ inside. With short points will scribe a 24 inch, and with long points a 34 inch circle.

With Points.....$2.25
Set Complete..... 4.00

EXTRA PARTS.

Long Points.....$0 50
Outside or Inside Caliper Legs..... 50
Auxiliary Pencil Holder..... 40
Extra Long Points, (scribe 44 inch circle,) made to order..... 60

STARRETT'S IMPROVED EXTENSION DIVIDERS.

No 89.

This is a well made, nicely finished Divider, with auxiliary caliper legs, which, together with a common pencil, form convenient combinations. The patent locking nut between the arms, against which a spiral spring acts, is a valuable feature. After the fine adjustment is made, the nut may be turned back, locking spring and arms firmly, thus remedying the weak point which renders the common wing dividers only as stiff as the adjusting spring. A fine threaded nut on the stud, through which the quadrant passes, is a more durable fastener than two or three threads tapped in the arm to hold the wing of the old style. The head and arms of this tool are made from best malleable iron, the rest of steel. The points are hardened and warranted first-class. The smallest size is 7 inches long; by adjustment of points becomes 9 inches, and will scribe a 22 inch circle; will caliper 11 inches outside and 13 inches inside. The second size is 9 inches; by adjustment of points becomes 12 inches, and will scribe a 30 inch circle and caliper 14 inches outside and 16 inches inside. The Dividers will be sold without caliper legs when so ordered.

7 inch, with Divider Legs only.....$1 25
9 " " " " 1 50
7 " Complete..... 2 25
9 " " 2 50

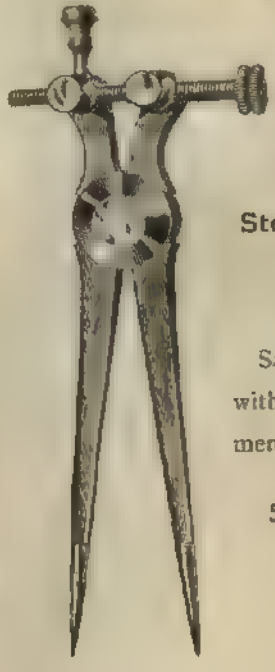
RELIABLE DIVIDERS.

Stevens' Reliable

No. 60.

We have added to our list the above undeviating Divider, which is forged from heavy stock, and operated with a right and left-hand screw the same as our Reliable Caliper. All machinists who have used it pronounce it a perfect tool, and one which they have repeatedly called for. Now made with two tension screws, thereby removing any back lash.

5 inch.....$1.50



RELIABLE DIVIDERS.

Stevens' Reliable

No. 61.

Same as No. 60, only with Thumb Attachment.

5 inch....$1.75

INSIDE CALIPERS.

Cast Steel.

No. 60

5 inch, per doz $6.00
6 " " 6.75

No. 8

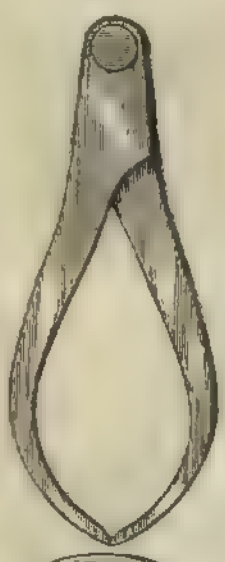
4 inch, per doz..... $5.50
6 " " 7.50

No. 14.

Same sizes and prices as Outside Calipers, No. 13.

No. 7.

No. 13.



OUTSIDE CALIPERS.

Cast Steel.

Price of Nos. 13 and 14.

2	3	4	5 inch.
$2.25	2.60	2.90	3.15 per dozen.

6	8	10	12 inch.
$3.50	5.25	6.50	7.25 per dozen.

15	18	21	24 inch.
$16.00	20.00	25.00	30.00 per dozen.

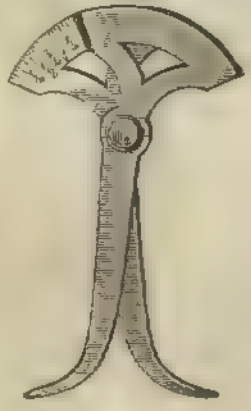
Per doz.	
4 inch	$6.00
6 "	7.50
8 "	10.50

COMBINED OUTSIDE AND INSIDE SELF-REGISTERING CALIPERS.

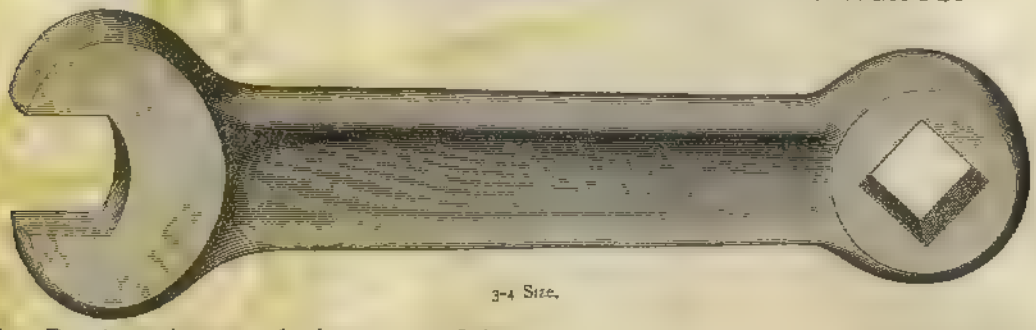
Nickel-Plated.

Per dozen..... $7.50
Each..... .45

Length, 3 inches.



WILLIAMS DOUBLE HEAD TOOL POST WRENCHES.



3-4 Size.

7 inch. For ½ inch nut and ⅝ screw, unfinished.....each, $0.35
8 " " ⅝ " " " ¾ " " ..... " .45
9 " " ¾ " " " ¾ " " ..... " .55

DOUBLE HEAD BOX WRENCHES.

Length, 9 inches, Openings to finish to ⅞ inch and 1 inch. Unfinished.....$0.45

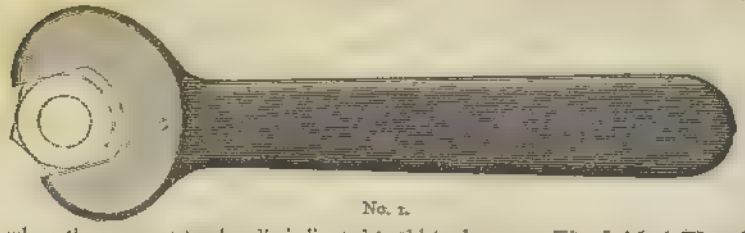
DOUBLE HEAD SET-SCREW WRENCHES.

Drop-Forged from Bar Steel.

Each opening forms an angle of twenty-two and a half (22½) degrees with the handle, which admits of turning any square head bolt or screw completely around where the swing of the handle is limited to forty-five degrees. Unfinished wrenches are furnished in nine sizes only as per odd numbers, but eighteen sizes finished wrenches are made (see list) as each forging is milled to two finished combinations. All these wrenches have concave handles and admit of milling to one or two sizes larger than stated in size.

Number Unfinished	Number Finished	For Set Screws, Size	Extreme Length	Thickness Heads.	Unfinished.	Finished.	Number Unfinished.	Number Finished.	For Set Screws, Size	Extreme Length	Thickness Heads	Unfinished	Finished.
65	65	3/16 & 1/4	3 3/8	1/8 & 1/4	$0.13	$0.26		74	1/16 & 1/8	6 5/8			$0.54
	66	3/16 " 5/16	3 3/8			.26	75	75	1/2 " 1/8	7 1/2	1/16 & 1/2	$0.33	.66
67	67	1/4 " 5/16	4	1/4 " 5/16	.15	.30		76	1/2 " 5/8	7 1/2			.66
	68	1/4 " 3/8	4			.30	77	77	5/16 " 5/8	8 3/8	1/2 " 9/16	.40	.80
69	69	5/16 " 5/8	5	5/16 " 11/32	.18	.36		78	5/16 " 3/4	8 3/8			.80
	70	5/16 " 1/2	5			.36	79	79	5/8 " 3/4	10	9/16 " 5/8	.48	.96
71	71	3/8 " 7/8	5 7/8	11/32 " 3/8	.22	.44		80	5/8 " 7/8	10			.96
	72	3/8 " 1/2	5 7/8			.44	81	81	3/4 " 7/8	11 5/8	5/8 " 11/16	.58	1.16
73	73	7/16 " 1/2	6 3/8	3/8 " 7/16	.27	.54		82	3/4 " 1	11 5/8			1.16

WILLIAMS ENGINEERS' WRENCHES.



No. 1.

Drop-Forged from Bar Steel.
Single Head.

These Wrenches are particularly adapted for Machine Tools, Locomotives, Pumps, Steam or Gas Engines and general shop use. The opening forms an angle of fifteen degrees with the handle, which admits of turning a hexagon nut completely around where the swing of the handle is limited to thirty degrees. The finished Wrenches are soft hed case-hardened and milled to fit U. S. standard nuts, but can be milled to other sizes when required. Prices will be given for Straight Spanner Box, Socket, Clutch and other Wrenches of any size or shape, upon receipt of samples or models.

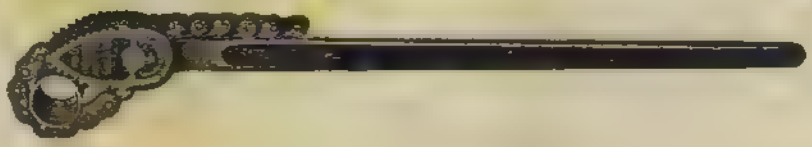
Number	Size Bolt, U. S. Standard Nut.	Opening Unfinished	Opening Finished.	Extreme Length.	Thickness Head.	Unfinished.	Finished.	Number.	Size Bolt, U. S. Standard Nut.	Opening Unfinished.	Opening Finished	Extreme Length.	Thickness Head.	Unfinished.	Finished.
0	1/16	5/16	13/32	2 7/8	1/32	$0.09	$0.18	10	1	1 3/4	1 5/8	14 7/8	3/4	$0.65	$1.30
1	1/4	13/32	1/2	3 3/4	1/4	.10	.20	11	1 1/8	1 29/32	1 13/16	16 5/8	63/64	.85	1.70
2	5/16	1/2	19/32	4 3/4	5/32	.12	.24	12	1 1/4	1 31/32	2	18 1/2	29/32	1.10	2.20
3	3/8	19/32	11/16	5 5/8	1/16	.14	.28	13	1 3/8	2 1/32	2 1/16	20 1/4	15/16	1.40	2.80
4	7/16	11/16	25/32	6 1/2	11/32	.17	.34	14	1 1/2	2 7/32	2 1/8	22 1/4	1 1/16	1.75	3.50
5	1/2	25/32	7/8	7 1/2	7/64	.20	.40	15	1 5/8	2 11/32	2 3/16	24	1 1/8	2.10	4.20
6	9/16	7/8	31/32	8 3/8	1/16	.25	.50	16	1 3/4	2 13/32	2 3/4	25 3/8	1 3/16	2.50	5.00
7	5/8	31/32	1 1/16	9 1/4	1/16	.32	.64	17	2	3 1/16	3 1/16	29 1/2	1 5/8	3.50	7.00
8	3/4	1 1/32	1 1/4	11 1/8	1/16	.40	.80	18	2 1/4	3 1/16	3 1/2	33	1 13/32	4.75	9.50
9	7/8	1 11/32	1 7/16	13	5/32	.50	1.00								

HALL'S ELASTIC PIPE CLAMPS.

To be used with the Hall Wrench.

For gripping very thin or highly polished brass or Nickel Plated Pipe or Tubing, without marring or crushing it.

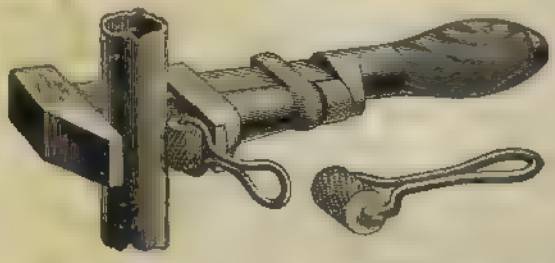
CHAMPION CHAIN PIPE WRENCH.



Cut showing chain as hung in center, swings either way.

For Gripping, Turning or Holding Pipe, Bolts, Bars, Shafts or Round Surfaces from ⅛ to 14 in. in diameter.

Size	No. 0	No. 1	No. 2	No. 3	No. 4	No. 5
Price	$2 50	3 50	5 50	7 50	11 00	18.00
Capacity, in.	⅛ to 1	¼ to 2	½ to 3	¾ to 6	1½ to 10	2 to 14
Length, in.	12½	19½	28	38½	50½	65
Weight, lbs.	1¾	4¼	9	17½	32	57
Extra Chain.....Each,	$0 75	1 00	1 50	2 50	4 00	6 00
Extra Jaws.....Pair,	1 00	1 75	2 75	4 00	5 50	7 50



PIPE ATTACHMENT.

No. 71.

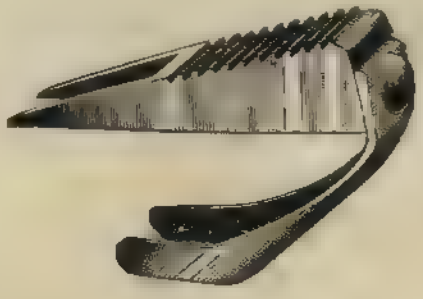
The cheapest pipe attachment for monkey wrenches made. The cylinder, of hardened steel, rolls in between the jaws of the wrench and any round iron or pipe, causing the wrench to grip it firmly.

⅜ inch.....each, $0.25

UNIVERSAL PIPE-WRENCH JAW.

It will grip and hold any round or irregular object, such as a steam or gas pipe, a six or eight-sided bolt head that has had its corners rounded off, etc. It can be used on the upper or bar jaw and also on the lower or sliding jaw. This is a great advantage, as it allows the using of the pipe wrench forward or backward, which no other pipe wrench will admit of.

No. 1, Fits 8 inch Wrench.....Price, 50 cts.
No. 2, Fits 10, 12 and 15 inch Wrench..... " 75 cts.
No. 3, Fits 18 and 21 inch Wrench..... " $1.25.

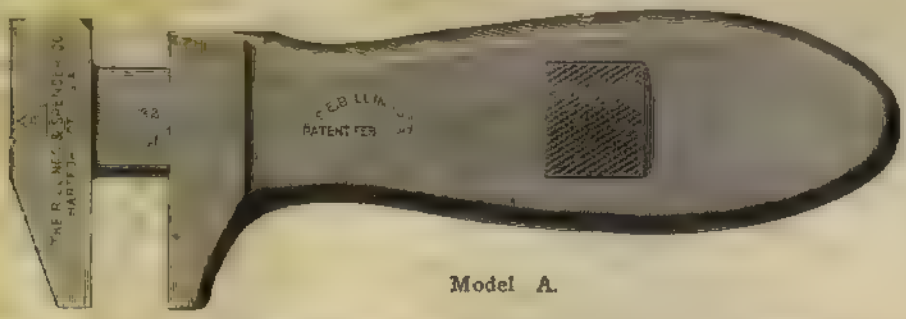


PIPE-WRENCH JAW.

Made in two sizes for 10 and 12-inch Wrenches.

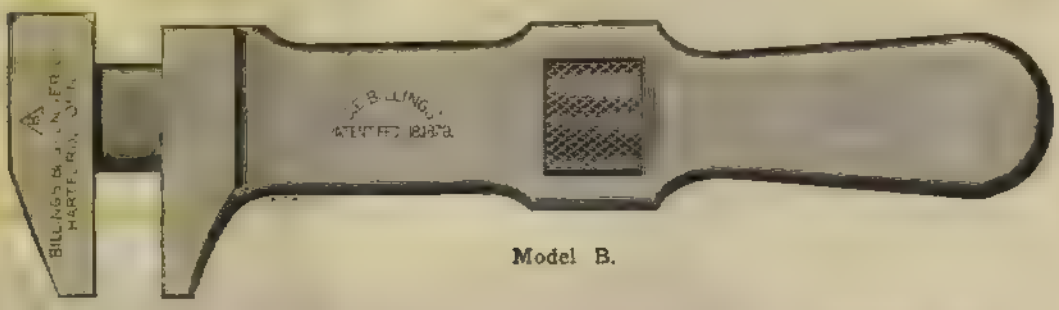
Per dozen.....$6.00
Each..... .50

BILLINGS' DROP-FORGED ADJUSTABLE POCKET WRENCHES.



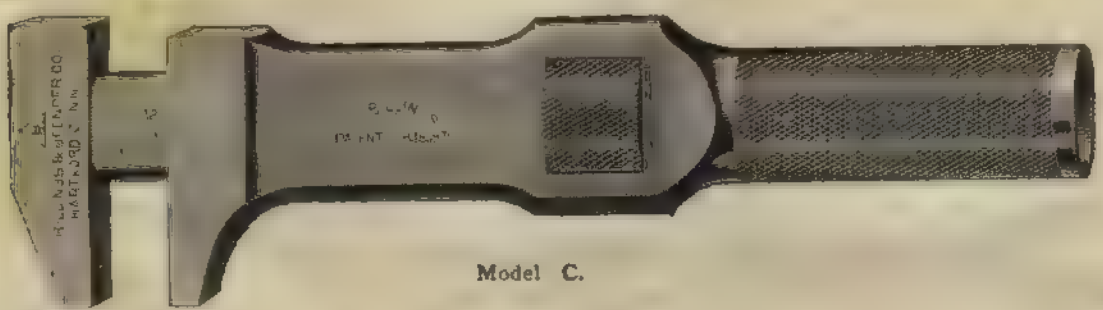
Model A.

4 inch Wrench, opens 1 inch, Weight 6½ oz., Black each..... $ .75. Nickel each.....$ 83
5 " " " 1¼ " " 9½ " " " ..... .83. " " 1.00



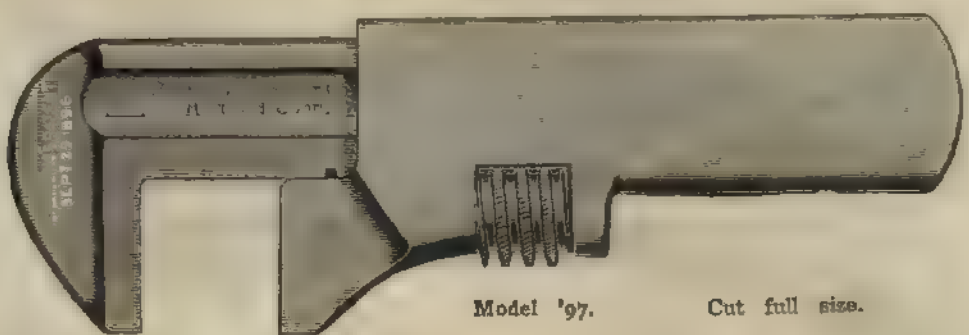
Model B.

5 inch Wrench, opens 1 ¼ inch, Weight 7 oz., Black each .. $ .75. Nickel each ...$ 83
6 " " " 1¾ " " 18 " " " ..... 1.00. " " ... 1.25



Model C.

5 inch Wrench, opens 1 ¼ inch, Weight 7 oz., Black each... .$ 75. Nickel each.....$ .83



Model '97. Cut full size.

Opens 1⅛ inch. Weight 5½ oz., Black each.. ... ..$ .50. Nickel each.....$ .60

BILLINGS & SPENCER'S NEW LINE OF DROP FORGED WRENCHES.

All of the following wrenches have the openings milled to size, whether in forged state or finished.

No. of Wrench.	Size Bolts, U. S. Standard Nuts.	Milled Openings for U. S. Standard Nuts	Extreme Length.	Thickness of Head.	Price each in Forged State.	Price each in Finished State.
200			4		$ .10	$ .20
201			4		.10	.20
202			5½		.12	.24
203			6		.15	.30
204			6½		.18	.36
205			7½		.20	.40
206			8¾		.25	.50
207			9½		30	.60
208			11		.35	.70
209			12		.40	.80
210			14		.45	.90
211	1		15		.60	1.20
212			17¼		.75	1.50
213		2	18½	1	1.00	2.00
214			19½		1.25	2.50
215			20½		1.60	3.20
216			22		2.00	4.00
217			24		2.50	5.00
218			26		3.00	6.00
219	2		29		3.50	7.00
220			33		4.50	9.00
221			38		6.00	12.00
222			44		8.00	16.00
223	and	and	3½	and	.12	.24
224	and	and	4½	and	.14	.28
225	and	and	4½	and	.16	.32
226	and	and	6	and	.18	.36
227	and	and	6	and	.20	.44
228	and	and	6½	and	.22	.44
229	and	and	6½	and	.23	.46
230	and	and	7¼	and	.24	.48
231	and	and	7¼	and	.25	.50
232	and	and	8¼	and	.28	.56
233	and	and	8¼	and	.30	.60
234	and	and	9½	and	.33	.66
235	and	and	9¼	and	.35	.70
236	and	and 1	10¾	and	.40	.80
237	and	and 1	10¾	and	.43	.86
238	and	and 1¼	12	and	.48	.96
239	and	and 1¼	12	and	.50	1.00
240	and	and 1	13	and	.53	1.06
241	and	and 1	13¾	and	.58	1.16
242	and 1	and 1⅛	14¾	and	.60	1.20
243	and 1	and 1⅛	15¾	and	.65	1.30
244	and 1¼	and 1⅛	16¾	and	.75	1.50
245	1 and 1¼	and 1	17½	and	.90	1.80
246	1 and 1¼	and 2	18½	and 1	1.10	2.20
247	1¼ and 1¼	and 2	19½	and 1	1.25	2.50
248	1¼ and 1¼	and 2	20½	and 1¼	1.40	2.80
249	1¼ and 1½	and 2	21¼	1 and 1¼	1.60	3.20
250	1¼ and 1½	and 2	22¼	1 and 1¼	1.80	3.60
251	1½ and 1½	and 2	23¼	1¼ and 1¼	2.00	4.00
252	1½ and 1½	and 2	24¼	1⅛ and 1⅛	2.25	4.50
253	1⅝ and 1⅝	and 2	25	1⅛ and 1⅛	2.50	5.00
254	1⅝ and 1⅝	and 2	26	1⅛ and 1⅛	2.75	5.50
255	1⅝ and 1⅝	and 2	27	1⅛ and 1⅛	3.00	6.00
256	1⅝ and 1⅝	and 2	28	1⅛ and 1⅛	3.25	6.50
257	1¾ and 1¾	and 2	29	1⅛ and 1⅛	3.50	7.00
258	1¾ and 2	and 3	30	1⅛ and 1⅛	4.00	8.00
259	1⅞ and 2	and 3	31	1⅛ and 1⅛	4.50	9.00
260	1⅞ and 2⅛	and 3	32	1⅛ and 1⅛	5.00	10.00
261	2 and 2¼	and 3	33	1⅛ and 1⅛	5.75	11.50

COES' PATENT SCREW WRENCHES.

Black. (Knife Handle.)

Size ..... inches,	4	6	8	10	12	15	18	21
Per doz.....	$8.00	9.00	10.00	12.00	14.00	24.00	30.00	36.00

Polished.

Size..... inches,	4	6	8	10	12	15	18	21
Per doz	$10.00	10 00	11.00	14.00	16.00	26.00	32.00	38.00

COES' PATTERN WRENCHES.

Wrought Bar.

	Black.					Bright.				
Inches.	6	8	10	12	15	6	8	10	12	15
Dozen .	$9 00	10.00	12.00	14.00	24.00	$10.00	12.00	14.00	16.00	26.00

GILES' PATENT PIPE WRENCHES.

Drop-Forged from Cast Steel.

Does not crush pipe, never slips, and will release grip instantly every time. Easily and quickly adjusted to different sizes of pipe. Made entirely of Cast Steel. A trial will convince the user that he has the best and most durable tool in the market. Sent upon receipt of price to any part of the U. S.

Length, 12 inches,	takes from	⅛ to 1 in.	Pipe	...each, $2 25
" 14 "	"	⅜ " 1½ "	.....	" 3.00
" 18 "	"	½ " 2 "	.....	" 4.00
" 24 "	"	¼ " 2½ "	.....	" 6.00

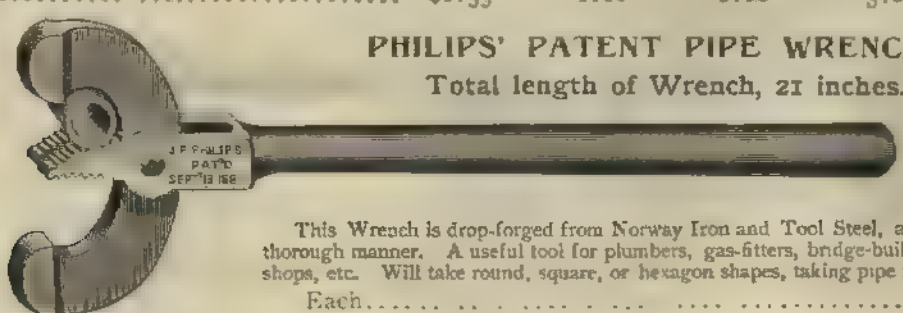
ALLIGATOR WRENCHES.

Always positive, always ready and never slips. These Wrenches are forged solid in one piece, from the best refined iron, with tempered-steel jaws. They have ratchet teeth cut diagonally across one jaw, thus enabling them to be used in three sizes at once. A single wrench will hold many sizes of nuts or bolts without adjusting. They are invaluable to engineers, gas-fitters, millwrights, and others of all kinds, and for general household or farmers' use.

Nos.....	1	2	3	4	5
Holds pipe.....inches,	½ to ⅜	⅜ to ¾	½ to 1¼	1¼ to 2	2 to 3
Holds round iron..... "	¼ " ¾	½ " 1	⅜ " 1⅜	1½ " 2½	2½ " 3½
Length..... "	5¾	10	16	22	27
Each.....	$0.35	1.00	2.00	3.00	4.50

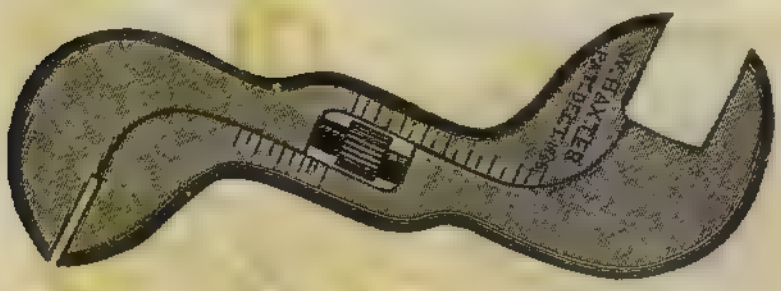
PHILIPS' PATENT PIPE WRENCHES.

Total length of Wrench, 21 inches.



This Wrench is drop-forged from Norway Iron and Tool Steel, and is finished in a thorough manner. A useful tool for plumbers, gas-fitters, bridge-builders, railroad repair shops, etc. Will take round, square, or hexagon shapes, taking pipe from ⅜ to 2 inches.

Each..... $4.50



BAXTER WRENCHES.

The peculiar shape of this popular Wrench enables it to fit corners about machinery where no other wrench could be used.

Length..... inches,	4	6	8	10	12
Each.....	$0.50	.75	1.00	1.50	2.00

BOARDMAN'S PATENT COMBINATION WRENCHES.

Made in the Most Thorough Manner, of the Best Material.

This combination comprises six useful tools, neatly and compactly arranged in a convenient form for practical use. These tools are: screw wrench, pipe wrench, hammer, nail claw, screw driver bit handle, or socket wrench.

Length..... inches,	4½	6	8	10
Nickeled..... per doz.,	$8.50	11.00	16.50	22.50

THE GEM POCKET WRENCHES.

3-Inch.

4-Inch.

Substantial and reliable, finely finished and nickel-plated. Very desirable for jewelers, amateurs, bicycle riders, and a great variety of uses.

3-inch.....	per dozen,	$4.50
4 "	"	6.00

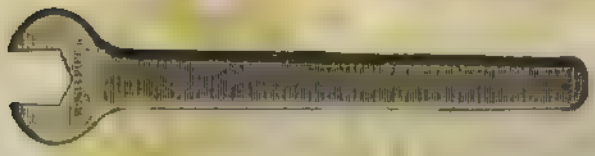
ECLIPSE POCKET WRENCHES.

Bright finish.....	per dozen,	$2.65.	Each,	$0.20
Gun finish.....	"	3.00.	"	.25
Nickel finish.....	"	3.38.	"	.30

We are prepared to give estimates on all kinds of machinery. To give a list and description of Machine Tools, etc., would make this catalogue too bulky. So we confine ourselves to small tools.

BILLINGS & SPENCER'S STANDARD MACHINE WRENCHES.

Drop forged from bar steel.



Single End Wrenches for Standard Hexagon Nuts.

Nos. 200 to 222, (old Nos. 46 to 61).

Double End Wrenches for Standard Hexagon Nuts.

Nos. 223 to 261, (old Nos. 62 to 69).

Single End Wrenches for Standard Hexagon Nuts.

Nos. 262 to 284, (old Nos. 90 to 107).

Double End Wrenches for Standard Hexagon Nuts.

Nos. 285 to 323, (old Nos. 108 to 117).

Double End Wrenches for Square and Hexagon Head Screws.

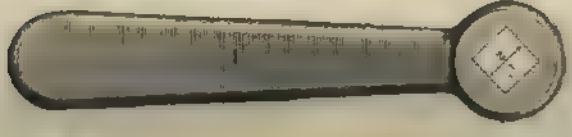
Nos. 368 to 391, (old Nos. 76 to 81).

Double End "S" Wrenches for Hexagon Nuts.

Nos. 324 to 340, (old Nos. 70 to 75).

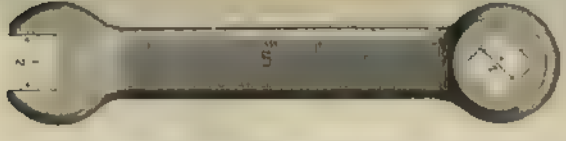
Double End "S" Wrenches for Square and Hexagon Screws.

Nos. 341 to 367, (old Nos. 84 to 89).



Box Tool Post Wrenches.

Nos. 1, 2, and 3.



Box Tool Post Wrenches.

Nos. 4 to 8.

Chuck Wrenches.

6 in. and 9 in.

STILLSON'S PIPE WRENCHES.

The "Stillson" is too well known to need any description. It is the leader among pipe wrenches.

Length open, ins.	6	8	10	14	18	24	36	48
Takes from	⅛ in. wire to ½ in. pipe	⅛ in. wire to ¾ in. pipe	⅛ in. wire to 1 in. pipe	¼ in. wire to 1½ in. pipe	¼ in. wire to 2 in. pipe	¼ in. wire to 2½ in. pipe	½ in. pipe to 3½ in. pipe	1 in. pipe to 5 in. pipe
Each	$2.00	2.00	2.25	3.00	4.00	6.00	12.00	18.00
Jaws	.07	.07	.75	1.00	1.33	2.00	4.00	6.00
Frames	.25	.25	.33	.45	.55	.65	.75	1.00
Nuts	.20	.20	.27	.35	.42	.50	.65	.80

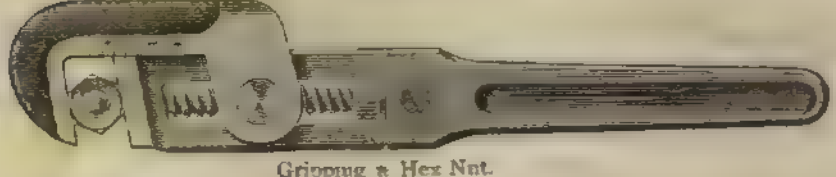
The 6 inch Wrench, with Screw Driver Attachment on end of handle, $2.37.
Nickel plated.. .. .. .. extra, $0.38

THE "TRIMO" PIPE WRENCHES.

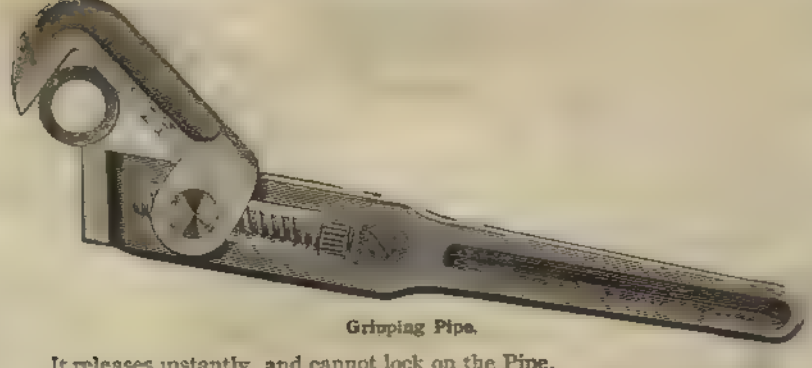
The "Trimo" Pipe Wrench is made of Forged Steel and is interchangeable on all its parts. It grips the pipe firmly without loss motion. Releases instantly and readily. Causes no trouble when used in close quarters. It does not crush the pipe.

Length open, ins.	6	8	10	14	18	24	36	48
Takes from	⅛ in. wire to ½ in. pipe	⅛ in. wire to ¾ in. pipe	⅛ in. wire to 1 in. pipe	¼ in. wire to 1½ in. pipe	¼ in. wire to 2 in. pipe	¼ in. wire to 2½ in. pipe	½ in. pipe to 3½ in. pipe	1 in. pipe to 5 in. pipe
Each	$2.00	2.25	2.25	3.00	4.00	6.00	12.00	18.00
Jaws	.07	.07	.75	1.00	1.33	2.00	4.00	6.00
Nut	.20	.20	.27	.35	.42	.50	.65	.80
Inserted Jaw	.25	.25	.33	.50	.55	.65	1.00	1.25

HALL'S PIPE AND NUT WRENCH.



Gripping a Hex Nut.



Gripping Pipe.

The Jaws are on an angle and have the advantages of an "S" Wrench.

It will grip a nut or bolt so that it cannot slip.

It is Drop Forged from Crucible Steel, and the jaws are hardened.

All the parts are made to standard gauges, and are interchangeable.

It has a scale to set the wrench to size before placing on the Pipe.

It is quickly adjusted to different sizes of pipe.

It grips, quickly and firmly, galvanized as well as other Pipe, and will not crush it, because it has three bearing points on the Pipe and by keeping the wrench sharp you can grip high on the Pipe.

It releases instantly, and cannot lock on the Pipe.

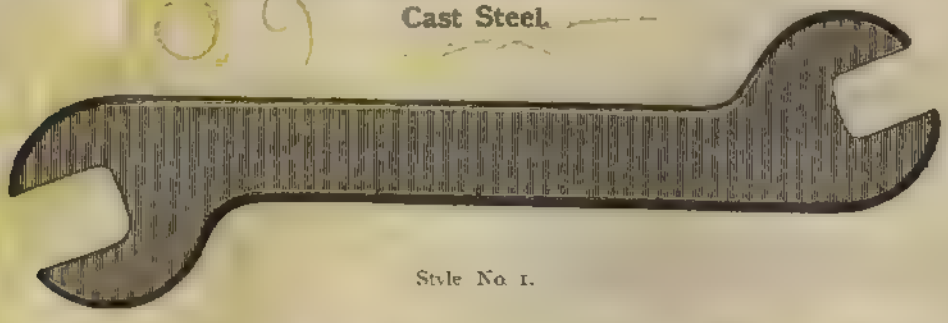
Having five gripping points it mars the Pipe less and acts more like the old Pipe Tongs than any other wrench.

Length Open	6	10	14	18	24	36	48	in.
Size of Pipe	⅛ to ½	⅛ to ¾	⅛ to 1¼	⅛ to 1½	⅛ to 2½	1 to 4½	1½ to 6	"
Largest Opening for Nut or Bolt	¾	1⅝	1¾	2¼	3¼	4⅜	6⅛	"
Price	Each, $2.00	2.50	3.00	4.00	6.00	12.00	18.00	

6-inch Nickel Plated, $2.75.

MACHINERY WRENCHES.

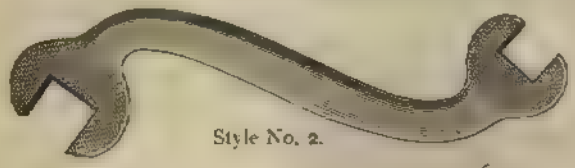
Cast Steel.



Style No. 1.

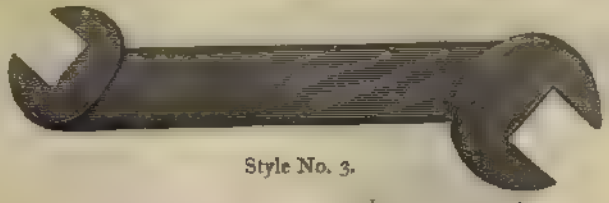
Nos.	40	41	42	43	44	45
Inches	3/8 x 1/2	7/16 x 5/8	5/8 x 3/4	3/4 x 7/8	7/8 x 1	1 1/4 x 1 3/8
Per lb.	$0.20	.20	.20	.20	.20	20.

Malleable Iron



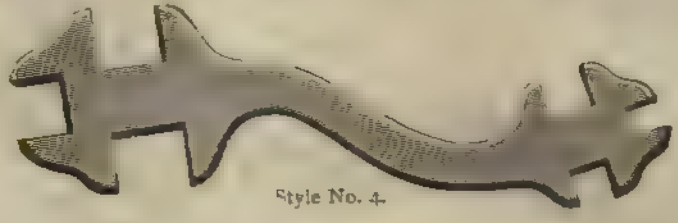
Style No. 2.

Nos.	4	5	6	7	8
Inches	1/4 x 1/2	5/8 x 1	3/4 x 5/8	5/8 x 3/4	3/8 x 1/2
Per lb	$0.15	.15	.15	.15	.15



Style No. 3.

Nos.	9	10	11	11 1/2	12	13	14
Inches	3/8 x 1/2	5/8 x 3/4	7/8 x 1	1 x 1 1/8	1" x 1 1/4	1 1/8 x 1 1/2	1 5/8 x 1 3/4
Per lb.	$0.15	.15	.15	.15	15	.15	.15



Style No. 4.

No. 21, For nuts. 3/8 to 1 3/4 inch.....per lb., $0.15
No. 22, " 3/8 to 1 3/8 " ..... " .15

SINGLE HEAD SET-SCREW WRENCHES.

Drop-Forged From Bar Steel.

All these Wrenches have concave handles and admit of milling to one or two sizes larger than stated in table.

No. 93

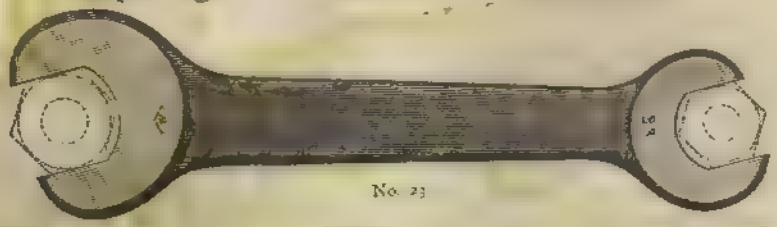
Number	For Set Screw, Size	Extreme Length.	Thickness Head.	Unfinished	Finished	Number	For Set Screw, Size	Extreme Length	Thickness Head	Unfinished	Finished
93	1/4	3 3/8	1/4	$0.10	$0.20	98	1/8	7 1/2	1/2	$0.27	$0.54
94	5/16	4 1/2	5/16	.12	.24	99	5/8	8	5/8	.30	.60
95	3/8	5 3/8	11/32	.15	.30	100	3/4	9 1/4	5/8	.35	.70
96	7/16	6 1/4	3/8	.20	.40	101	7/8	10 1/2	11/16	.42	.84
97	1/2	7	7/16	.25	.50	102	1	11 1/2	3/4	.50	1.00

15° Angle Single and Double End Wrenches.

No. of Wrench	Size Bolts U. S. Standard Nuts	Milled Openings for U. S. Standard Nuts	Extreme Length	Thickness of Head	Price, each in Forged State	Price, each, in Finished State
262	$\frac{1}{4}$	$\frac{5}{16}$	3	$\frac{5}{16}$	$ .08	$ .16
263	$\frac{5}{16}$	$\frac{11}{32}$	$3\frac{3}{8}$	$\frac{11}{32}$	.09	.18
264	$\frac{3}{8}$	$\frac{1}{2}$	5	$\frac{1}{4}$	.10	.20
265	$\frac{7}{16}$	$\frac{15}{32}$	$5\frac{5}{8}$	$\frac{1}{4}$	.12	.24
266	$\frac{1}{2}$	$\frac{17}{32}$	$6\frac{1}{2}$	$\frac{5}{16}$	.14	.28
267	$\frac{9}{16}$	$\frac{9}{16}$	$7\frac{1}{2}$	$\frac{5}{16}$	.17	.34
268	$\frac{5}{8}$	$\frac{5}{8}$	$8\frac{3}{8}$	$\frac{5}{16}$	.20	.40
269	$\frac{11}{16}$	$\frac{11}{16}$	$9\frac{1}{4}$	$\frac{5}{16}$	.25	.50
270	$\frac{3}{4}$	$1\frac{1}{16}$	10	$\frac{5}{16}$	.32	.64
271	$\frac{13}{16}$	$1\frac{1}{4}$	$11\frac{3}{4}$	$\frac{5}{16}$	.40	.80
272	$\frac{7}{8}$	$1\frac{5}{16}$	$13\frac{1}{2}$	$\frac{3}{8}$	.50	1.00
273	1	$1\frac{3}{8}$	$14\frac{3}{4}$	$\frac{3}{8}$	.65	1.30
274	$1\frac{1}{8}$	$1\frac{3}{16}$	$16\frac{3}{4}$	$\frac{15}{32}$	.85	1.70
275	$1\frac{1}{4}$	2	$18\frac{3}{8}$	$\frac{15}{32}$	1 10	2.20
276	$1\frac{3}{8}$	$2\frac{3}{16}$	$20\frac{1}{4}$	$\frac{1}{2}$	1 40	2.80
277	$1\frac{1}{2}$	$2\frac{3}{8}$	$22\frac{1}{4}$	$\frac{1}{2}$	1 75	3.50
278	$1\frac{5}{8}$	$2\frac{7}{16}$	25	$\frac{17}{32}$	2.10	4.20
279	$1\frac{3}{4}$	$2\frac{3}{4}$	28	$\frac{9}{16}$	2.50	5.00
280	$1\frac{7}{8}$	$2\frac{15}{16}$	31	$\frac{5}{8}$	3.00	6.00
281	2	$3\frac{1}{8}$	34	$\frac{5}{8}$	3.50	7.00
282	$2\frac{1}{4}$	$3\frac{1}{2}$	37	$\frac{3}{4}$	4.50	9.00
283	$2\frac{1}{2}$	$3\frac{7}{8}$	40	$\frac{3}{4}$	6.00	12.00
284	$2\frac{3}{4}$	$4\frac{1}{4}$	44	$\frac{7}{8}$	8.00	16.00
285	$\frac{1}{4}$ and $\frac{5}{16}$	$\frac{5}{16}$ and $\frac{3}{8}$	3	$\frac{5}{32}$ and $\frac{5}{32}$	.12	.24
286	$\frac{1}{4}$ and $\frac{1}{4}$	$\frac{5}{16}$ and $\frac{7}{16}$	4	$\frac{3}{16}$ and $\frac{3}{16}$	.14	.28
287	$\frac{5}{16}$ and $\frac{1}{4}$	$\frac{5}{16}$ and $\frac{1}{2}$	4	$\frac{3}{16}$ and $\frac{3}{16}$	.15	.30
288	$\frac{5}{16}$ and $\frac{5}{16}$	$\frac{5}{16}$ and $1\frac{1}{8}$	5	$\frac{1}{4}$ and $\frac{1}{4}$	.17	.34
289	$\frac{1}{4}$ and $\frac{5}{16}$	$\frac{1}{2}$ and $1\frac{1}{8}$	5	$\frac{1}{4}$ and $\frac{1}{4}$	.18	.36
290	$\frac{1}{4}$ and $\frac{3}{8}$	$\frac{1}{2}$ and $\frac{11}{16}$	$5\frac{1}{2}$	$\frac{5}{32}$ and $\frac{5}{32}$	.20	.40
291	$\frac{1}{4}$ and $\frac{3}{8}$	$\frac{11}{32}$ and $\frac{11}{16}$	$5\frac{1}{2}$	$\frac{5}{32}$ and $\frac{3}{16}$	.21	.42
292	$\frac{5}{16}$ and $\frac{7}{16}$	$\frac{11}{32}$ and $\frac{3}{4}$	$6\frac{1}{2}$	$\frac{3}{16}$ and $\frac{3}{16}$	.23	.46
293	$\frac{3}{8}$ and $\frac{7}{16}$	$\frac{11}{32}$ and $\frac{3}{4}$	$6\frac{1}{2}$	$\frac{3}{16}$ and $\frac{3}{16}$	.25	.50
294	$\frac{3}{8}$ and $\frac{1}{2}$	$\frac{11}{32}$ and $\frac{13}{16}$	7	$\frac{1}{4}$ and $\frac{1}{4}$	.30	.60
295	$\frac{7}{16}$ and $\frac{1}{2}$	$\frac{11}{32}$ and $\frac{13}{16}$	7	$\frac{1}{4}$ and $\frac{5}{16}$	.30	.60
296	$\frac{5}{16}$ and $\frac{9}{16}$	$\frac{11}{32}$ and $\frac{7}{8}$	9	$\frac{3}{16}$ and $\frac{3}{16}$	.33	.66
297	$\frac{1}{4}$ and $\frac{9}{16}$	$\frac{1}{2}$ and $\frac{7}{8}$	9	$\frac{3}{16}$ and $\frac{3}{16}$	.35	.75
298	$\frac{1}{4}$ and $\frac{5}{8}$	$\frac{1}{2}$ and $1\frac{1}{16}$	$10\frac{1}{2}$	$\frac{1}{4}$ and $\frac{1}{4}$	.40	.80
299	$\frac{5}{16}$ and $\frac{5}{8}$	$\frac{11}{32}$ and $1\frac{1}{16}$	$10\frac{1}{2}$	$\frac{1}{4}$ and $\frac{1}{4}$	.43	.86
300	$\frac{5}{16}$ and $\frac{5}{8}$	$\frac{11}{32}$ and $1\frac{1}{4}$	12	$\frac{3}{16}$ and $\frac{5}{16}$	.45	.90
301	$\frac{3}{8}$ and $\frac{5}{8}$	$1\frac{1}{16}$ and $1\frac{1}{4}$	12	$\frac{3}{16}$ and $\frac{3}{16}$	.50	1.00
302	$\frac{3}{8}$ and $\frac{3}{4}$	$1\frac{1}{16}$ and $1\frac{5}{16}$	13	$\frac{3}{16}$ and $\frac{1}{4}$	.58	1.16
303	$\frac{3}{8}$ and $\frac{3}{4}$	$1\frac{1}{4}$ and $1\frac{5}{16}$	$13\frac{3}{4}$	$\frac{5}{16}$ and $\frac{1}{4}$	.65	1.30
304	$\frac{3}{8}$ and 1	$1\frac{1}{4}$ and $1\frac{3}{8}$	$14\frac{3}{4}$	$\frac{1}{4}$ and $\frac{1}{4}$	.75	1.50
305	$\frac{3}{8}$ and 1	$1\frac{5}{16}$ and $1\frac{3}{8}$	$15\frac{3}{4}$	$\frac{3}{8}$ and $\frac{1}{4}$	.80	1.60
306	$\frac{3}{8}$ and $1\frac{1}{8}$	$1\frac{5}{16}$ and $1\frac{1}{16}$	$16\frac{3}{4}$	$\frac{3}{8}$ and $\frac{15}{32}$	.90	1.80
307	1 and $1\frac{1}{8}$	$1\frac{3}{8}$ and $1\frac{1}{2}$	$17\frac{3}{4}$	$\frac{3}{8}$ and $\frac{15}{32}$	1.00	2.00
308	1 and $1\frac{1}{4}$	$1\frac{3}{8}$ and 2	$18\frac{1}{2}$	$\frac{3}{8}$ and $\frac{15}{32}$	1 12	2.24
309	$1\frac{1}{4}$ and $1\frac{1}{4}$	$1\frac{7}{16}$ and 2	$19\frac{1}{2}$	$\frac{15}{32}$ and $\frac{15}{32}$	1.25	2.50
310	$1\frac{1}{8}$ and $1\frac{3}{8}$	$1\frac{7}{16}$ and $2\frac{1}{16}$	$20\frac{1}{2}$	$\frac{15}{32}$ and $\frac{1}{2}$	1.40	2.80
311	$1\frac{1}{4}$ and $1\frac{3}{8}$	2 and $2\frac{1}{16}$	$21\frac{1}{4}$	$\frac{1}{2}$ and $\frac{1}{2}$	1 60	3.20
312	$1\frac{1}{4}$ and $1\frac{1}{2}$	2 and $2\frac{1}{8}$	$22\frac{1}{4}$	$\frac{17}{32}$ and $\frac{1}{2}$	1 80	3.60
313	$1\frac{3}{8}$ and $1\frac{1}{2}$	$2\frac{1}{16}$ and $2\frac{1}{8}$	$23\frac{1}{4}$	$\frac{1}{2}$ and $\frac{1}{2}$	2.00	4.00
314	$1\frac{1}{4}$ and $1\frac{5}{8}$	$2\frac{1}{16}$ and $2\frac{3}{16}$	$24\frac{1}{2}$	$\frac{1}{2}$ and $\frac{9}{16}$	2 25	4.50
315	$1\frac{1}{4}$ and $1\frac{3}{4}$	$2\frac{1}{8}$ and $2\frac{3}{16}$	25	$\frac{1}{2}$ and $\frac{9}{16}$	2 50	5.00
316	$1\frac{3}{8}$ and $1\frac{3}{4}$	$2\frac{1}{8}$ and $2\frac{1}{4}$	26	$\frac{1}{2}$ and $\frac{9}{16}$	2.75	5.50
317	$1\frac{3}{8}$ and $1\frac{3}{4}$	$2\frac{3}{16}$ and $2\frac{1}{4}$	27	$\frac{9}{16}$ and $\frac{9}{16}$	3.00	6.00
318	$1\frac{3}{8}$ and $1\frac{7}{8}$	$2\frac{3}{16}$ and $2\frac{5}{16}$	28	$\frac{9}{16}$ and $\frac{5}{8}$	3.25	6.50
319	$1\frac{3}{4}$ and $1\frac{7}{8}$	$2\frac{1}{4}$ and $2\frac{5}{16}$	29	$\frac{9}{16}$ and $\frac{5}{8}$	3.50	7.00
320	$1\frac{3}{4}$ and 2	$2\frac{1}{4}$ and $3\frac{1}{4}$	30	$\frac{9}{16}$ and $\frac{5}{8}$	4 00	8.00
321	$1\frac{3}{4}$ and 2	$2\frac{5}{16}$ and $3\frac{1}{4}$	31	$\frac{5}{8}$ and $\frac{5}{8}$	4.50	9.00
322	$1\frac{3}{4}$ and $2\frac{1}{4}$	$2\frac{5}{16}$ and $3\frac{1}{2}$	32	$\frac{5}{8}$ and $\frac{1}{2}$	5 00	10.00
323	2 and $2\frac{1}{4}$	$3\frac{1}{4}$ and $3\frac{1}{2}$	33	$\frac{5}{8}$ and $\frac{1}{2}$	5.75	11.50

WILLIAMS ENGINEERS' WRENCHES.

Drop-Forged from Bar Steel. Double Head.



No. 23

Number	Size of Jaws, Standard Nuts	Openings Unfinished	Openings Finished	Extreme Length	Thickness Heads	Unfinished,	Finished.
21	⅜ & ⅜	¼ & ½	⅜ & ⅜	3¼	⅛ & ⅛	$0 12	$0.24
22	⅜ " ¼	¼ " ½	⅜ " ⅜	4	⅛ " ⅛	.14	.28
23	⅜ " ⅜	¼ " ½	⅜ " ⅜	4	⅛ " ⅛	15	.30
24	⅜ " ⅜	¼ " ½	⅜ " ⅜	4⅛	⅛ " ⅛	.17	.34
25	⅜ " 7/16	¼ " ½	⅜ " ⅜	4⅛	⅛ " ⅛	18	.36
26	⅜ " ½	¼ " ½	⅜ " ⅜	5⅛	⅛ " ⅛	.20	.40
27	⅜ " ½	¼ " ½	⅜ " ⅜	5⅛	⅛ " ⅛	.21	.42
28	⅜ " ½	¼ " ½	⅜ " ⅜	6⅛	⅛ " ⅛	.23	.46
29	⅜ " ⅝	¼ " ½	⅜ " ⅜	6⅛	⅛ " ⅛	25	50
30	⅜ " ⅝	¼ " ½	⅜ " ⅜	7¼	⅛ " ⅛	28	.56
31	⅜ " ⅝	¼ " ½	⅜ " ⅜	7¼	⅛ " ⅛	30	.60
32	⅜ " ⅝	¼ " ½	⅜ " ⅜	8¼	⅛ " ⅛	.34	.68
33	⅜ " ⅝	¼ " ½	⅜ " ⅜	8¼	⅛ " ⅛	.36	.72
34	⅜ " ⅝	¼ " ½	⅜ " ⅜	9¼	⅛ " ⅛	.41	.82
35	⅜ " ⅝	¼ " ½	⅜ " ⅜	9¼	⅛ " ⅛	43	86
36	⅜ " ⅝	¼ " ½	⅜ " ⅜	11⅛	⅛ " ⅛	.50	1.00
37	⅜ " ⅝	¼ " ½	⅜ " ⅜	11⅛	⅛ " ⅛	53	1.06
38	⅜ " ⅝	¼ " ½	⅜ " ⅜	13⅛	⅛ " ⅛	.62	1.24
39	⅜ " ⅝	¼ " ½	⅜ " ⅜	13⅛	⅛ " ⅛	.65	1.30
40	⅜ " 1	¼ " ½	⅜ " ⅜	15⅛	⅛ " ¾	.78	1.56
41	⅜ " 1	¼ " ½	⅜ " ⅜	15⅛	⅛ " ¾	.82	1.64
42	⅜ " 1	¼ " ½	⅜ " ⅜	17⅛	⅛ " ⅛	1 00	2.00
43	⅜ " 1	¼ " ½	⅜ " ⅜	17⅛	⅛ " ⅛	1 08	2.16
44	⅜ " 1	¼ " ½	⅜ " ⅜	19⅛	⅛ " ⅛	1.27	2.54
45	⅜ " 1	¼ " ½	⅜ " ⅜	19⅛	⅛ " ⅛	1 35	2.70
46	⅜ " 1	¼ " ½	⅜ " ⅜	21⅛	⅛ " ¾	1 65	3.30
47	⅜ " 1	¼ " ½	⅜ " ⅜	21⅛	⅛ " ¾	1.75	3.50
48	⅜ " 1	¼ " ½	⅜ " ⅜	23⅛	⅛ " 1	2 10	4.20
49	⅜ " 1	¼ " ½	⅜ " ⅜	23⅛	⅛ " 1	2.25	4 50
50	⅜ " 1	¼ " ½	⅜ " ⅜	25⅛	⅛ " 1	2 65	5.30
51	⅜ " 1	¼ " ½	⅜ " ⅜	25⅛	⅛ " 1	2 65	5.30
52	⅜ " ¼	¼ " ½	⅜ " ⅜	27⅛	⅛ " 1	3 30	6 60
53	⅜ " 1	¼ " ½	⅜ " ⅜	27⅛	⅛ " 1	3 55	7 10
54	⅜ " 2	¼ " ½	⅜ " ⅜	30⅛	⅛ " 1	4 15	8 30
55	⅜ " 2	¼ " ½	⅜ " ⅜	30⅛	⅛ " 1	4.55	9.10
56	⅜ " 2¼	¼ " ½	⅜ " ⅜	34⅛	⅛ " 1	5 35	10.70
57	⅜ " 2¼	¼ " ½	⅜ " ⅜	34⅛	⅛ " 1	5 95	11 90

WESTCOTT WRENCHES.

3	inch.	opening	from	0	to	1	inch	. .	$0 75
10	"	"	"	0	"	1⅜	"	.....	1.00
12	"	"	"	0	"	1⅝	"	.....	1.25
14	"	"	"	0	"	2	"	.....	1.75

8	inch	grasping	pipe	from	½	to	¾	in	.	$1.25
10	"	"	"	"	⅛	"	1	"	..	1.50
12	"	"	"	"	⅜	"	1¼	"	..	2.00
14	"	"	"	"	⅜	"	1½	"	..	2.50

Extras.

Jaws for 8 inch wrenches, each, 20c.; 10 inch, 30c.; 12 inch, 45c.; 14 inch, 60c.
Grip steels with screw for 8 inch pipe wrench, each, 50c; 10 inch, 60c.; 12 inch, 70c.; 14 inch, 75c
Burrs for 8 inch wrenches, each, 10c.; 10 inch, 15c.; 12 inch, 15c.; 14 inch, 20c.
Screws for holding burr in place, each, 5c.

"ALWAYS READY" WRENCHES.

A Wrench always ready for use, that needs no adjusting, fitting any nut from ¼ of an inch to 2 inches. Also holds and turns round iron and pipe. They are first-class in every respect, manufactured from prepared steel, forged, and tempered in oil, polished and nickel-plated.

No. 1	Takes Nut or Pipe	¼ to ¾ inch	per dozen,	$5.00
" 2	" "	" ¼ " 1¾ "	"	6.75
" 2½	" "	" ¼ " 1¾ "	"	10.50
" 3	" "	" ¾ " 1¾ "	"	16.00

SPANNER WRENCHES.

Four sizes, Nos. 1, 2, 3 and 4.

No. 1	Circle, 2 ins., forgings only	$0.30
No. 2	" 2½ " " "	.30
No. 3	Circle, 3 ins.	.30
No. 4	" 4 "	.35

CHANTRELL'S ADJUSTABLE SOCKET WRENCHES.

The above cut shows the Wrench sufficiently to require no further description in detail. It was originally made to supply a need in the practice of the inventor, and its continued use has so completely demonstrated its value as a general tool, that it is now being introduced to the trade, and is receiving a very generous patronage.

It can be used in many places that cannot be reached by other wrenches, and for putting up hangers, running taps and reamers, and putting in lag screws, it has no equal. It is also very useful in the tool room and machine shop and on the farm It is made in three sizes, and of the best material.

6 inch	Adjustable from	¼ to ⅜ inch square	each,	$1.00
9 "	" "	⅛ " ¾ " "	"	1.25
12 "	" "	⅜ " 1 " "	"	1.75

TEMPERANCE TOPICS.

The temperance people are again after us, this time suggesting the following subjects for discussion·

Is alcohol essential in the rational treatment of disease?

Is the use of alcohol in medicine conducive to intemperance, and if so, in what manner and to what degree?

Is alcohol a stimulant?

New scientific discoveries relating to the influence of alcohol on brain and nerves.

What is the duty of the medical profession in relation to temperance reform?

The physiological effects of alcohol.

Does alcohol in any form aid digestion or any other important vital function? Consideration to be given to the experiments made with artificial digestive fluids, by Professors Chittenden and Mendel, of Yale University

Alcohol in the light of modern research.

Summary of medical experience in the treatment of disease without alcohol in the last twenty-five years.

Is alcohol necessary or useful as a prophylactic against the hot weather diseases of children?

Those interested can send replies to Dr. Crothers, at Hartford, Conn. . We haven't room for it in the CLINIC.

CASTRATION FOR CRIME.

A bill has been introduced into the Michigan legislature by Mr. R. Edgar providing for the castration of all inmates of the Michigan Home for the Feeble Minded and Epileptic before their discharge; also for that of all persons convicted of a felony for the third time, and of those convicted of rape.

In another state a similar bill has been introduced, in which seduction is also included as a case calling for castration. This is a mistake, as it is a provision that will certainly bring the law into disrepute, from the impossibility of getting at the truth in such matters, and the awful consequences following the conviction upon mistaken or false testimony. Were castration to follow every occasion where sexual intercourse has been indulged in without the sanction of law, what a race of eunuchs there would be! And what an array of earth's greatest and most illustrious citizens would be thereby prevented from propagating their species.

AMERICAN PLANTS.

The Smithsonian Institution, at Washington, requests information concerning native American plants on the following points :

1. Local name.
2. Local uses, together with historical facts.
3. Geographical distribution and degree of abundance in the wild state.
4. Is the plant collected for market, and if so,
   - (*a*) At what season of the year?
   - (*b*) To how great an extent?
   - (*c*) How prepared for market?
   - (*d*) What is the effect of such collection upon the wild supply?
   - (*e*) What price does it bring?
   - (*f*) Is the industry profitable?
5. Is the plant, or has it ever been, cultivated, and if so, give all the information on the subject, particularly as to whether such supplies are of superior quality, and whether the industry has proved profitable.
6. If not cultivated, present facts concerning the life history of the plant, which aid in determining methods of cultivation.
7. Is the drug subjected to substitution or adulteration, and if so, give information as to the plants used for this purpose.

Information is specially desired upon such plants as are believed to have an influence, medicinal or toxic, on man or animals; such as mescal, loco-weed, etc. The CLINIC readers may aid in this important work.

CELANDINE FOR CANCER.

In the middle ages celandine, the chelidonium majus, was a popular remedy for cancrum oris, warts and other affections. The plant has long since fallen into disuse; but recently a Russian physician has revived it as a remedy for cancer. He mixes the extract with an equal quantity of distilled water, filters through absorbent cotton and heats in a test tube until the fluid bubbles up a few times. This increases the efficacy of the remedy, besides sterilizing it. He then injects it subcutaneously around the periphery of the tumor, but not into it. The pain is considerable, but soon subsides. No inflammatory reaction follows. The tumor becomes reduced in size and may disappear entirely. When the tumor is open, the fluid is also applied to the surface.

It would be better if the active principles of this plant were extracted and tested separately instead of employing the extract.

LATERAL MYELITIS.

Can constipation and fecal absorption give rise to myelitis?

Spitzka remarked once that as chilling the feet could cause spinal affections, it was reasonable to expect that remedies could usefully be applied to the feet.

Brunton asserts that the *materies morbi* of spinal cord diseases is generated in the intestinal canal.

A case of disease of the lateral columns, with the claw-like hands, atrophy of the interosseous muscles and paresis generally, came recently into my hands. I removed seven large hemorrhoids, and gave the following: Picrotoxin, gr. 1-134; physostigmine salicylate, gr. 1-250; strychnine arseniate, gr. 1-30; nuclein, gtt. ij; podophyllin, gr. 1-12; calcium sulphocarbolate, gr. v. Direct: This to be taken in capsule, every two hours while awake.

The result has been marked improvement in every respect; the bowels have been regular, the strength is improving and the patient is quite relieved of her despondency and now believes she is getting well.

SMALL COLLEGES.

We have heard so much of the desirability of large educational institutions that it is refreshing to hear something from the other side. Secretary Wilson is quoted in the *Chicago Record* as saying that he believes in the multiplication of small colleges. "The nearer you get the colleges to the people the more people you will get into the colleges. I don't believe in the centralization of educational facilities. The fewer pupils a professor has the more attention he can give them, and while, of course, he ought to have enough to provide him a decent compensation, he ought not to have more than he can handle."

In this connection, a student who had attended one of the great Eastern medical colleges, where the class numbered about 800, remarked that in three weeks at one of the smaller Chicago colleges he had received more clinical instruction than in three years at the unwieldy Eastern school.

SIMON'S DIAGNOSIS.

To the standard treatises upon clinical diagnosis has been added a new and valuable work, by Charles E. Simon, of Johns Hopkins. In its 504 octavo pages he describes the chemical and microscopical examination of the blood, urine, feces and other secretions and excretions. The book is freely illustrated. As the modern, scientific practice of medicine requires the physician to provide himself with a complete microscopic and chemical laboratory, this is the manual to which he must turn for instructions in its operation.

The College of Physicians and Surgeons of Chicago opens its doors to women.

Shaller's Guide to Alkaloidal Medication

IS A BOOK YOU WANT

Unsolicited

Shaller's "Guide" is the long-looked for, giving in small compass all the information needed. The articles on aconitine and gelseminine alone are worth the price of the book.

S. M FISHER, M.D

Headquarters, Ky

I have received Shaller's Guide to Alkaloidal Medication. I have bought other books on this subject, but they are not "in it" with this excellent little work It tells me things that I could never find anywhere else before

DR. S. F. ASHCRAFT,

Mullica Hill, N. J.

Shaller's "Guide to Alkaloidal Medication" has arrived and I have read it through It is a most satisfactory exposition of the therapeutic indications for the drugs included. About the only fault I can find with it is that, like all good things, there isn't enough of it With this compilation as a basis, filling in and enlarging as new facts regarding the active principles are brought out, I see no reason why American medicine cannot adopt this scientific method of drug treatment with the best of satisfaction.

E. A. WELCH, M.D.,

Sutton, Mass.

I have read Prof. Shaller's book with great pleasure and profit; his concise, conversational style makes it the most interesting book I have read in many a day. It should be in the hands of every physician, as it only needs to be read to convince any thinking man of the advantages of Alkaloidal Granules over the old Galenical preparations My friend, Dr. Gordon, says: "I have learned more about the uses and value of dosimetric medicines from its perusal than from everything else I have read."

G. GARNETT KEMPER, M D.,

Leonard, Tex

Have just received Dr Shaller's work. The binding is good, paper and type splendid The matter supplies a long felt want. The work should be on the table of every physician and student. There are a great many physicians who are ignorant of the active principles, and a great many more who are ignorant of, and some prejudiced against, "dosimetric theraphy" This work will disabuse their minds and open their eyes. I bespeak for it a large sale. I would not be without it for five times the price, as it is a book of ready reference.

M F. DUMAS, M.D.,

Bald Knob, Ark.

CONTENTS

Thirty-four Essays on the Following Active Principles:

ACONITINE, AGARICIN, APOMORPHINE, ARBUTIN, ASPARAGIN, ATROPINE, BETAINE, CACTIN, CALCIUM SULPHIDE, CICUTINE, COLCHICINE, CONVALLAMARIN, COPPER ARSENITE, DIGITALIN, EMETINE, ERGOTIN, GELSEMININE, GLONOIN, HYOSCYAMINE, LOBELINE, MERCURY BICHLORIDE AND CALOMEL, MORPHINE AND CODEINE, PILOCARPINE, PODOPHYLLIN, QUASSIN, QUININE, SCILLITIN, SEIDLITZ SALT, SPARTEINE, STROPHANTHIN, VERATRINE, AND ZINC SULPHOCARBOLATE.

WE WILL MAIL YOU A

COPY on receipt of **$1.50**

WITH A

Subscription to the CLINIC added, $2.00

If you are not satisfied, send it back and we will refund your money

THE ABBOTT ALKALOIDAL CO.

Station X - - CHICAGO.

Opinions.

I am very much pleased with Shaller's "Therapeutic Guide" I think it should be in every doctor's library.

DR. A. W DAVIDSON,

Brownsburg, Ind.

I beg to acknowledge receipt of Shaller's "Guide," and would say that the "Introduction" to the text is to me, worth the price of the book. It is just the work needed by one who is timidly feeling his way in the dark I shall rely hereafter on everything that is recommended by Dr. Abbott. DR. C. J. HESS,

Duquesne, Pa.

I received "Shaller's Guide" a few days since. It just fills the bill exactly—an American guide by an American—henceforth it will be my therapeutical Bible I have been using alkaloids in my practice almost exclusively for the past two years in acute diseases, and I know that in most cases, if seen early enough, diseases can be jugulated. Not the least beauty of the granules is that there need be no guess work about the dosage as there is with tinctures and fluid extracts.

J. C. SMITH, M D.,

Woolstock, Ia.

Doctor Shaller's Therapeutical Guide to Alkaloidal Medication duly received. I have examined the book and will say that you can keep your money with thanks I prefer the book. Much of it is so nearly in accord with my own experience and observations, that it is comforting to have so practical and faithful an observer to corroborate many points that have been plainly convincing, but yet there remained a kind of chronic hungering for further proof from the experience of others The chapter on gelsemine is one of especial interest to me In the nagging pains of labor and after pains. I have used it for many years, with seldom other than satisfactory results

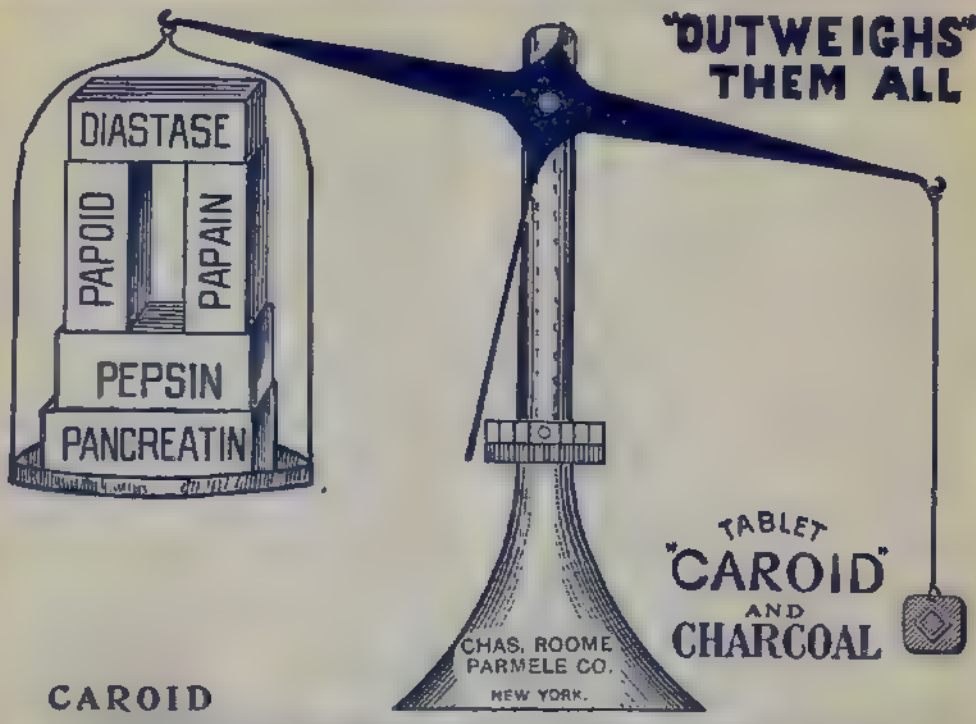
WILSON REED, M.D.,

Indianapolis.

The copy of Shaller's "Guide" is received and I am highly pleased with it. The work has the merit of being brief, concise and clear, combined with a smooth, free and easy style It is not only a valuable and useful book for the practice of "Dosimetry," but is equally well suited to the old method, if one wishes to obtain a clearer idea of the rationale of the action of remedies in the treatment of diseased conditions

J THOMSON, M.D

Kansas City, Mo.



"OUTWEIGHS" THEM ALL

TABLET "CAROID" AND CHARCOAL

CAROID

THE ONLY FERMENT WHICH PROMPTLY DIGESTS ALL FOOD EATEN BY MAN.

"THE ACTIVE PRINCIPLE OF LIFE."

THE ORIGINAL — STANDARD

NUCLEIN SOLUTION.

FORMULA OF DR JOHN AULDE.

Nuclein Solution (Aulde) is permanent, non-toxic, non-irritant, thoroughly aseptic, and is not affected by climatic changes. It may be USED EITHER BY THE MOUTH OR HYPODERMICALLY.

GENERAL INDICATIONS:

A disorganized state of the blood—all forms of wasting disease. It is our greatest builder.

Chemically, Nuclein is a phosphorized proteid the chief of the defensive proteids of the organism it is also found in plant cells and upon its presence or absence depends the vitality and growth of both animal and plant life. The therapeutic virtues of Nuclein are due to its influence upon Leucocytosis that is, Nuclein increases the number of leucocytes in the blood stream at the same time augmenting their functional activity, thus stimulating cellular action to resist the morbid changes produced by bacteria and their products. The great value of this product has been repeatedly demonstrated in a long list of formidable diseases, not alone as a curative agent, but as a preventive as well.

SPECIAL INDICATIONS:

Diphtheria, Tonsillitis (Quinsy), Laryngitis, Typhoid Fever, Cholera Infantum, Diarrhea, Dysentery, Pneumonia, Broncho-Pneumonia, Tuberculosis, Influenza, Bronchitis, Pleurisy, Anemia, Malaria and Chlorosis, and all similar conditions when the watering body needs support. It is invaluable after surgical operations and loss of blood from any cause.

Alkaloidal Clinic Coupon.

THE NUCLEIN CHEMICAL CO.:
Please send me a sample of Nuclein (Preparation) with descriptive literature. I will read the literature, test your sample carefully and report results. I have never asked you for a sample of Aulde's Nuclein before.

Dr._____

Town _____ State _____

Stamps enclosed for postage

PRICE TO PHYSICIAN AND DRUGGIST.

	Per Dozen
Nuclein Solution—One half oz. (240 average adult doses)	$9.00
Nuclein Tablets—Two hundred (200 average adult doses)	9.00
Nuclein Powder—One-half oz. (2 drops of solution in each 3 grains)	9.00

The above preparations of Nuclein (Aulde) may be obtained of physician's supply houses and the trade generally.

SEND YOUR ADDRESS

For descriptive literature and case reports. Use coupon for sample, and send stamps for postage.

THE NUCLEIN CHEMICAL COMPANY

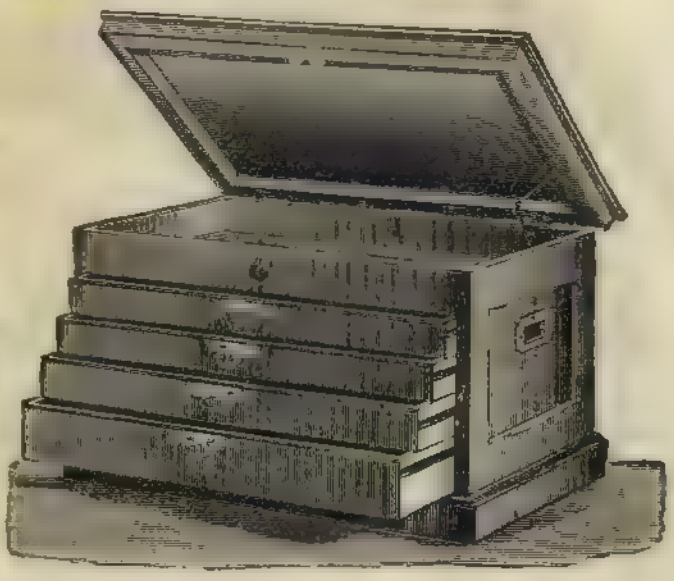
Station X, CHICAGO

THE ACME TOOL CHESTS.

For Machinists and Jewelers.

The accompanying cut represents a new Machinists' and Jewelers' Tool Chest. It is meeting the unqualified approval of all who have examined it, and is pronounced the most perfect article of the kind that has ever been put upon the market. As will be seen by the cut, it is a Cabinet containing four drawers of several depths, suitable for holding the various small tools, etc., which are so extensively used in the above named trades

The outside dimensions of the Cabinets are as follows:—No. 3, 21 inches long by 14 inches wide, by 12½ inches high. No. 2, 18¾ inches long by 11½ inches wide by 10 inches high No. 1 12 inches long by 9⅜ inches wide by 8¼ inches high



No. 3. First Drawer 18 inches long by 10½ inches wide by 1⅛ inches deep. Second Drawer 18 inches long by 10½ inches wide by 1⅜ inches deep. Third Drawer 18 inches long by 10½ inches wide by 1¾ inches deep. Fourth Drawer 18 inches long by 10½ inches wide by 2⅜ inches deep. There is a space under the lid of 2¾ inches, and also one in the base 1½ in. depth.

Each..... $8.00

No. 2. First Drawer 15⅛ inches long by 8½ inches wide by 1 inch deep. Second Drawer 15⅛ inches long by 8½ inches wide by 1 inch deep. Third Drawer 15⅛ inches long by 8½ inches wide by 1 inch deep Fourth Drawer 15⅛ inches long by 8½ inches wide by 1⅜ inches deep. This also has a space under the lid of 2½ inches, and in the base one of 1⅛ ins.

Each..... $8.00

No. 1. First Drawer 9¾ inches long by 6⅞ inches wide by ⅜ & ⅛ inches deep. Second Drawer 9¾ inches long by 6⅞ inches wide by ⅜ & ⅛ inches deep. Third Drawer 9¾ inches long by 6⅞ inches wide by ⅜ & ⅛ inches deep. Fourth Drawer 9¾ inches long by 6⅞ inches wide by 1½ inches deep. The space under the lid of this size is 1⅜ inches at the top and ⅜ inch in the base.

Each..... $6.00

These Cabinets are made of black walnut, cherry and oak, and nicely finished and polished They are furnished with Yale locks, consisting of sixty combinations, and two keys, and supplied with nickel-plated draw pulls of new design. This will also be found to be just the thing for Draughtsmen, Watchmakers and Amateurs, or even a Cabinet for holding Curiosities, Photographs, etc., as it is nicely finished Sizes given are inside measurements of the drawers.

JEWELERS' OR MACHINISTS' CHESTS.

New.

Made of selected chestnut, trimmed with black walnut moulding, black walnut panels, and nicely finished.

No. 28. With two drawers. Receptacle under cover, 18 x 10 x 2½; sliding tray, under cover, 16¾ x 5½ x 1¼; first drawer, 17 x 5¼ x 1¼; second drawer 17 x 5¼ x 2½.

Each..... $4.50

No. 29. With three drawers: receptacle under cover, 21 x 11⅝ x 3⅜; sliding tray, under cover, 20 x 6⅛ x 1¾; first drawer, 20 x 10⅛ x 1; second drawer, 20 x 10⅛ x 1½; third drawer, 20 x 10⅛ x 2½. These are inside dimensions.

Each..... $6.00

No. 30. With three drawers: inside measure 27 x 12, depth under cover, 4 inches tray, 1¼ inches drawers, 1, 1⅜, 2½ inches

Each..... $7.50

SAWYER'S STEEL SPIRIT LEVELS.

Comparing these with the ordinary cast iron level, we guarantee them to possess the following superior qualities: Lightness, strength, accuracy, large bearing surface, durability and high finish. They being nickel-plated on steel are less liable to rust. The glasses being set solid, if they are once right they are always right. Were they dropped there is no danger of picking them up in two or more pieces. These levels are also ground.

No. 46. 6 inch, price each.....$0.90

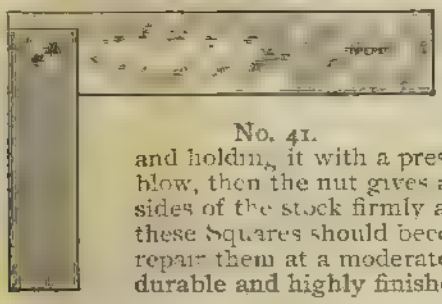
No. 47. With double plumb, 6 inch, price each.....$1.60

No. 48. 9 inch, with double plumb, price each....$1.80

No. 49. 12 inch, with double plumb, price each.....$2.00

SAWYER'S IMPROVED TRY SQUARE.

With Tempered Blade.



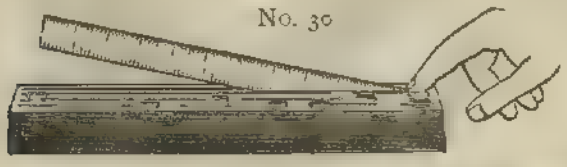
No. 41.

The blade is tempered throughout and is firmly seated in a fine gray iron stock by the most powerful device that could be used, and that is, a cam or eccentric bolt. A perfect seat for the blade is first obtained, the bolt having a slight eccentric opposite the blade, is rotated by a special wrench forcing the blade to its seat and holding it with a pressure that is almost impossible to start even from a violent blow, then the nut gives an additional security by holding the bolt and drawing the sides of the stock firmly against the blade. If, after constant use for a long time, these Squares should become slightly worn, by sending them to us we can easily repair them at a moderate expense. We warrant every one of them to be accurate, durable and highly finished. They are built to use.

Sizes	4 in.	6 in.	8 in.	10 in.	12 in.
Price Each	$1.75.	$2.50.	$3.00.	$4.00.	$5.00.

CASE OF RULES.

Almost every mechanic uses more or less rules, difficulty is found in having a place and keeping them in that place; if kept separated they take up much room, and if especial pains are not taken they will be found in the wrong place, if found at all. We think the article, illustrated here, will be highly appreciated in connection with a set of rules. Its dimensions are 12½ x 1⅜ x 1¼ inches. There is a finger hole at the end of each rule, so arranged that by pressing upon the rule at this point it rises up and is easily extracted. It is highly ornamental and takes up but little room in the "kit." The case is not sold separate. Will be filled with rules of any desired graduation. Price and contents as follows:



No. 30

One 1 inch Spring Tempered Rule
One 2 " " " "
One 3 " " " "
One 4 " " " "
One 6 " " " "
One 9 inch Spring Tempered Rule
One 12 " " " "
One 4 " Narrow Spring Tempered Rule
One Center Gauge.

Case, with rules, will be sent prepaid for $4.35.

SELF-ACTING ALCOHOL BLOW-LAMPS.

Very useful for soldering or brazing small articles, or hardening small tools—a capital paint burner.

No. 1.	Diameter, 2¾	in., height,	5¾	in.		$1 25
" 2.	" 3	" "	5¾	"		1 50
" 3.	" 3½	" "	6	"		2.00
" 4	" 4	" "	6½	"		2.50

GLASS LAMPS.

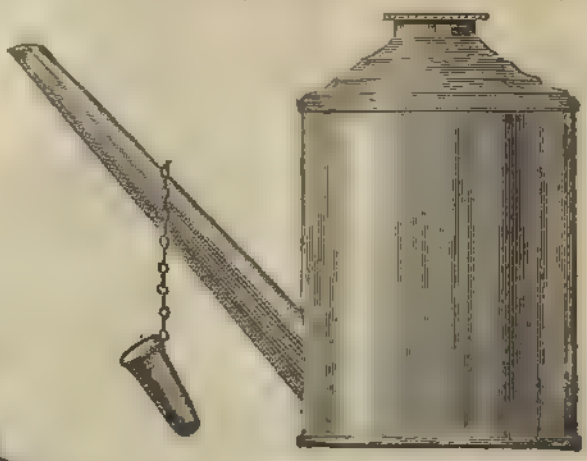
Globular form (as in cut)..... ...each, 4 oz., 30c., 8 oz., 40c
Cylindrical form..... each 30c.
Glass Lamps, with nickel-plated wick attachments and thumb screws for regulating flame..... " 35c.

SPHERICAL GLASS LAMPS.

On Stands.

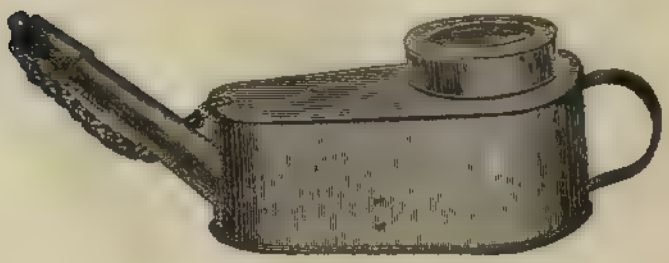
The position of the flame can be altered to suit the convenience of the operator.

Small.....each, 60c. | Large.....each, $1.25



TIN ALCOHOL LAMPS.

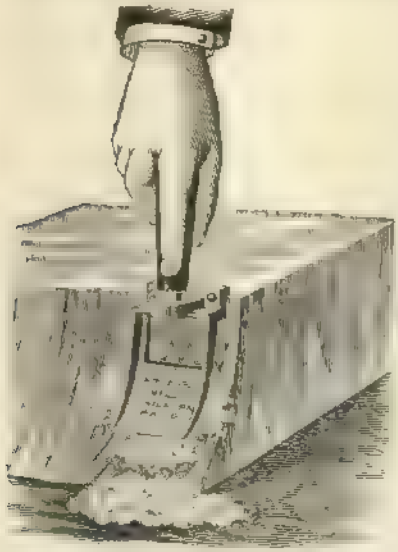
No. 1.	3½	in. high,	3	in. diam.				each,	$30c
" 2	4	"	"	4	"	"		"	40c
" 3	5	"	"	5	"	"		"	50c.



OBLONG TIN AND BRASS LAMPS.

Tin.....each, 20c.
Brass..... " 40c.

SAVES TIME !——SAVES LABOR !——SAVES ICE !



ASK YOUR JOBBER ABOUT THEM

"CROWN" ICE CHIPPER

The only practical tool for chipping ice quickly to small uniform pieces for use in Ice Cream Freezers, in place of the old time bag and hatchet. A 20 lb. block of ice can be reduced to small pieces, size of peanuts, in five minutes. Saves all waste of ice. Useful in Bar Rooms, Restaurants, etc.

"GEM" ICE SHAVE

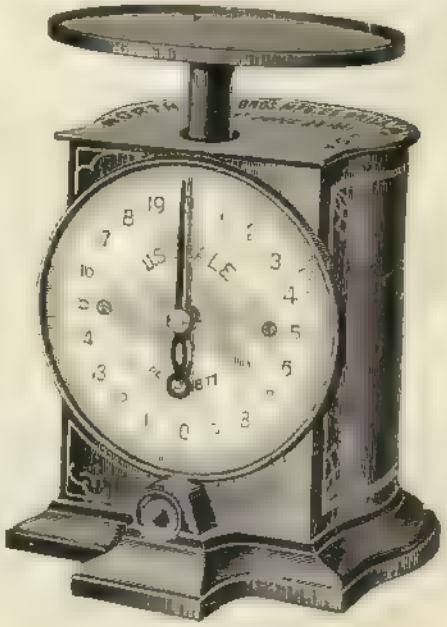
For shaving ice from blocks in Refrigerator without removal. Shaved ice is desirable for cooling Cantaloupes, Melons, Tomatoes, Fruits, Oysters on half-shell, Wines, Liquors, Lemonades, and other iced drinks, at home or at Soda Fountains, Bar Rooms and Restaurants.

ASK YOUR JOBBER ABOUT THEM

U. S. Dial Scales

Designed to meet needs of Household for Scale without loose weights

They are arranged to balance pan or dish in weighing. Useful in the Household for weighing sugar and fruits, in preserving or canning, comparing weights of goods purchased, etc.



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North Bros. Mfg. Co.

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PHILADELPHIA, PA.

CATALOGS SENT ON APPLICATION

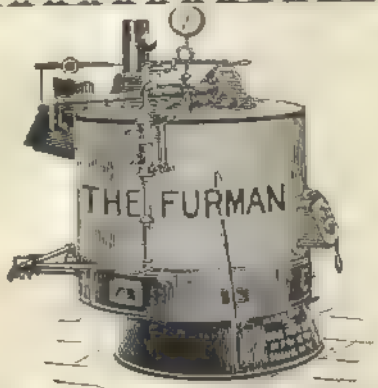
LACE LEATHER

How is your Stock?
Low, then buy the best on Earth for the money.

Manufactured by

JOHN C. HAGAN & CO.

P. O BOX No. 9 MANCHESTER, VA.



25% Saved

ON YOUR COAL BILL

If your House is Heated by a Furman Boiler.

Let us make you an Estimate FREE.

THE HERENDEEN MFG. CO.

12 Post St., GENEVA, NEW YORK

Improved Columbia Washer

Latest and Best

The Dealer makes a better profit on the **Columbia** than on the common washers. *Send for prices and terms.*

BENBOW MFG. CO.

1007 North 13th St. St. LOUIS, MO

THE IMPROVED

PERFECTION CAKE TINS

The Groove Prevents Leak

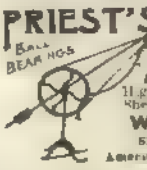
10 Styles Round, Square, Oblong

Millions in use Write for Prices

Richardson Mfg. Co.,

140 Main St., - Bath, N. Y.

PRIEST'S CLIPPERS



Largest Variety, Toilet, Hand, Electric Power

ARE THE BEST.

Higher [illegible] your money and Sheep Shearing Machines.

WE MAKE THEM.

SEND FOR CATALOGUE TO

American Shearer Mfg. Co., Nashua, N.H., U.S.A.

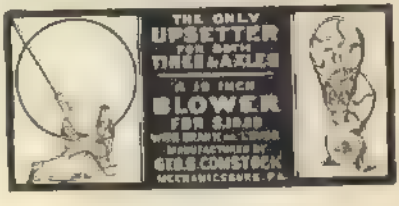
THE "GLOBE" WASHER IS THE "BEST" WASHER MADE

The Globe is a double-action machine, strictly High Grade, and has points of advantage possessed by no other. Write at once for terms and full particulars.

—MADE BY—

"GLOBE" WASHING MACHINE CO.

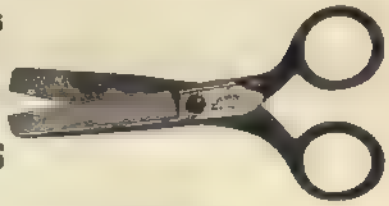
511-513-515 and 517 West Second St., CINCINNATI, OHIO



72 Years **72 Years**

Established 1825

Celebrated **HEINISCH** Shears



ACKNOWLEDGED THE BEST

Tailors' Shears, Trimmers, Scissors,
Tinners' Snips, Etc.

Write for Catalogue

R. Heinisch's Sons Co.

Newark, N. J.

New York Office, 90 Chambers Street

...MASONS' TOOL BAGS...

CANVAS TOOL BAGS FOR MASONS

Made of Extra Strong Duck, with Leather Seams, Straps and Handles
Bottoms Protected with Metal Studs

Made in Four Lengths, viz.: 18, 20 22 and 24 Inches Across Bottom

WRITE FOR PRICES

S. S. MALLETT, 271 Broadway, New York

Rolling Step Ladders for Stores

No Modern Store is equipped up-to-date without the.....

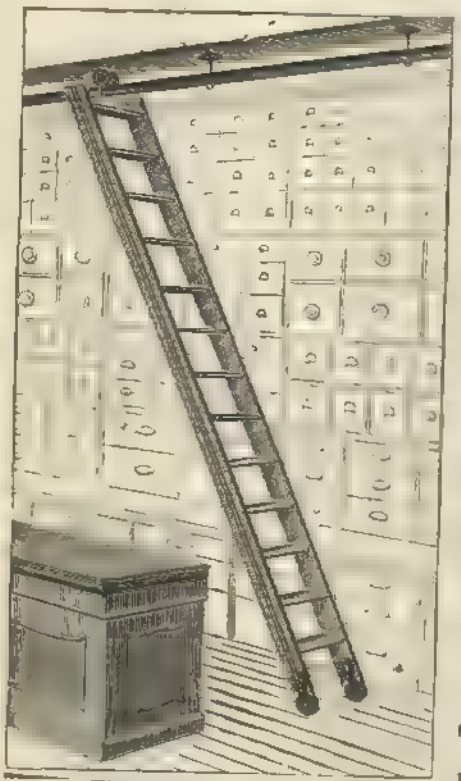
Bicycle Step Ladders

as part of its outfit.

The cuts on this page show but 2 styles of the many we make. We will show other styles in the next issue of this magazine.

We make Ladders to turn corners; to fit all kinds of uneven

The Bicycle Step Ladder



The "Chicago" Ladder

shelving; to work where floor is slanting; to fit any special requirements—*and more Ladders than all other houses combined.*

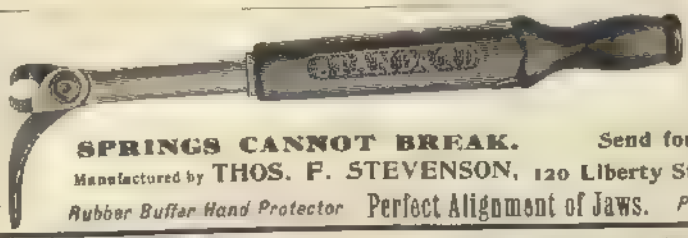
Circulars for the asking

The Bicycle Step Ladder Co.

50 South State Street
CHICAGO, ILL.

New York Agency:
E. J. Hussey & Co., 80 John St., New York

New England Agency:
Homer Young, 40 Wall St., Bridgeport, Conn.



(Patents Pending.)

STANDARD NAIL PULLER

Only one size made. Of Best Quality and Workmanship.

SPRINGS CANNOT BREAK. Send for Circular and Discounts.

Manufactured by THOS. F. STEVENSON, 120 Liberty St., NEW YORK, N. Y.

Rubber Buffer Hand Protector Perfect Alignment of Jaws. *Pivotal Rivet 15-32" Diameter*

A TOASTER That Toasts Does not dry or burn the bread . . . . . .

Bakes Cakes Used under common round Cake Griddle, will heat it evenly and make less smudge and smoke . . .

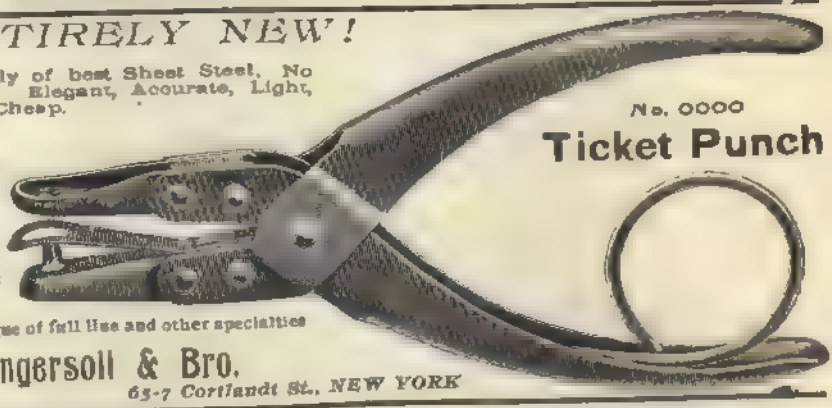
FOR GAS, GASOLENE OR BLUE FLAME OIL COOK STOVE

List 50 cents each Write for prices

KINNE MANUFACTURING CO. Minneapolis, Minn.

ENTIRELY NEW!

Formed entirely of best Sheet Steel. No hand work. Elegant, Accurate, Light, Strong and Cheap.



No. 0000

Ticket Punch

NET, TRADE

With Round Hole Dies. $3.60 per doz

Fancy Dies $4 00 per doz

Send for Catalogue of full line and other specialties

Robt. H. Ingersoll & Bro.

65-7 Cortlandt St., NEW YORK

DEMING PUMPS THE WORLD'S BEST

SPRAY FOR PROFIT

WE MANUFACTURE

PUMPS FOR ALL PURPOSES

Our Spray Pumps and Nozzles are used by the experiment stations and all leading horticulturists. The best fruit and berries can only be produced by spraying. Write to-day for a illustrated 96 Page Book on Spraying, FREE. Address

THE DEMING CO., Salem, Ohio.

General Agencies [illegible]

Euchre Punch

Something new, especially adapted for euchre parties. With plain or assorted dies. We can furnish dies that correspond with the name and style of the punch namely, hearts, spades, diamonds and clubs. Can comfortably be carried in vest pocket.

Handsomely nickel-plated. List, doz., $3.00

Reservoir Punch

For Euchre and Whist Parties

PATENT PENDING

POCKET catches pieces punched from Tally Cards, prevents litter of the carpet. Is hinged, can be opened, emptied and closed in an instant.

Handsomely nickel-plated. List, doz., $20.00

Of great value to railroads, as it prevents the replacing of pieces punched out of monthly or commutation tickets. Valuable in restaurants.

The Fred. J. Meyers Mfg. Co., *HAMILTON, OHIO*

Eastern Agent, F. J. MATTISON, 50 Warren St., N. Y. City

Write for prices and catalogue. [illegible] per cent punches. We are the largest manufacturers in the world of Ticket and Conductors' punches.

Pure Water

. . . BY USING THE.....

I. X. L. GALVANIZED STEEL CHAIN PUMP...

Something new. The best pump in the world. Everything made entirely of Galvanized Steel. Lasts a life time. Will not rust, no wood to rot, accumulate filth, warp or fail to pieces. *Write for descriptive circulars to*

O. P. SCHRIVER & CO.

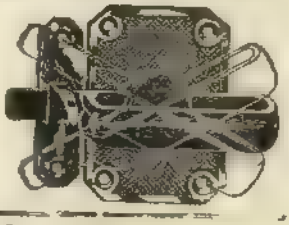
CINCINNATI, O.

FAMILY, CONFECTIONERY, HANGING and POSTAL ...NOVELTIES, ETC.. **SCALES**

JOHN T. RYAN
75 CHAMBERS STREET
New York Agent
For Sale by the Wholesale Hardware Trade

PELOUZE SCALE & MFG. CO., SUCCESSORS TO GILFILLAN SCALE & HARDWARE CO.
133-139 S. CLINTON STREET, CHICAGO, ILL.

DOOR HOLDERS, for Inside and Outside Doors, all finishes
TRANSOM LIFTERS, all sizes and finishes.
REFRIGERATOR HANDLES and LATCHES, reversible. No mortising required.
NUMBERS and LETTERS, any finish, on brass, Aluminum Numbers and Letters, Brass and Aluminum Castings
LUCIUS A. HINE & CO.
16 North Canal Street, Chicago, Ill.



"WEIGHS AND CONVEYS"

90%

of all articles that are weighed are trucked before or after weighing.

Our Scale Trucks will sell faster and give you a better profit than any goods you are now handling. Write us for prices and terms.

ERIE SCALE TRUCK CO.,
ERIE, PENNA.

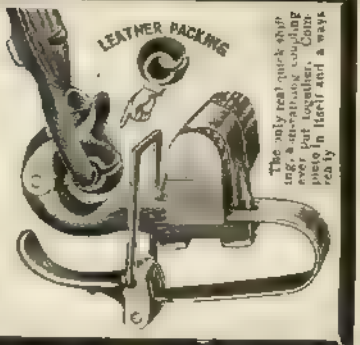
THE BRADLEY...
SHAFT-COUPLING

NO BOLTS NUTS SCREWS NO RUBBERS WRENCH RATTLE

Prevents Profanity. Automatically takes up its own wear

Over 40,000 pairs in use. 12,000 pairs sold in 1895

[illegible] for Circular and Price List. C. C. Bradley & Son, SYRACUSE, N. Y.



"BUY THE BEST"

THE CHALLENGE ICEBERG REFRIGERATOR

We make refrigerators for every purpose for which such an article can be used. Quality, material and workmanship of the very highest grade. Send for catalogue.

CHALLENGE CORN PLANTER CO., Grand Haven, Mich., U. S. A.

Ready Seller

No Stock Complete Without Them

Patented **Spangler Cycle Wagons**
Boys' Express Wagons
Boys' Velocipedes

The Tricycle Manufacturing Co.
MANUFACTURERS
SPRINGFIELD, OHIO, U. S. A.
Box 75

A FIRST-CLASS 3-4 inch, 3 ply, **RUBBER HOSE**, wound with heavy steel wire, complete with brass couplings and bands.

INVINCIBLE

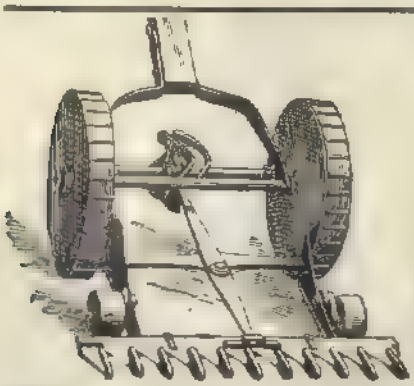
I FULLY WARRANT this Hose for the Season of 1897, and will replace any proving defective.

6½ CENTS PER FOOT.

I will be pleased to have you favor me with an order for a sample length, and have you give it a thorough trial, before you place your order for this season's hose. I have also

Ten Other Grades of Rubber and Cotton Hose.

JOHN W. BUCKLEY, 156 South St., NEW YORK.



THE CLIPPER
Our Improved Lawn Mower

Light, more *durable* and *less liable* to get out of order than those now in general use. Nothing escapes the grasp of the Pioneer, weeds, dandelions and plantains being cut as closely and evenly as grass. Only requires the same power to cut grass two feet high as it would to cut two inches, and cuts more closely in the mowing of irregular surfaces and spaces, such as between posts of fences, walks and shrubbery. The Clipper Mower is not analogous to other lawn mowers, as it does not roll down the grass preparatory to cutting it; the finger bars and fingers thereon of the mower, gather in the grass in nearly an upright position, and the vibration or reciprocating motion of the knives shears off the grass with uniformity. *There is no use for the sickle or shears where the Clipper is used.* For descriptive Circulars and Prices address the makers.

CLIPPER LAWNMOWER CO., Norristown, Pa., U.S.A.

NEW GIBBS **LAWN-RAKE**

Coated with Pure Block Tin, will not tarnish when carried in stock

Send for Catalogue

Of Lawn Rakes, Garden Rakes, Garden Trowels, Weeding Hooks, Lawn Sprinklers, Hose Nozzles, Post Hole Diggers, Can Openers, Mincing Knives, Pruning Sheers, Carry Combs etc.

☞We are also the makers of the "Hustler" and "Regulator" Rakes with U shaped Heads. Our "Model" and "Ohio Girl" Lawn Rakes, with wood head and wire teeth are good sellers. PRICE LOW.

Send for Prices

If you want the Best, insist upon having the New "GIBBS." It costs no more and will please your customers better—in short

"It's Perfection in Lawn Rakes"

GIBBS MFG. CO., CANTON, O.

conditions of greatest efficiency with least weight and consistent with reasonable life. They can be charged from any 110 volt direct current circuit, such as is used in most factories, private plants and most towns of any considerable size. The process of charging and making the necessary connections requires about three hours, is very simple, and unless the current from the batteries is used to run the carriage they will remain charged for an indefinite period. When the recharging has been completed the current is automatically cut out and the purchaser relieved of any anxiety in regard to the carriage from the time charging connection is made until the use of the carriage is again required.

The batteries weigh 850 pounds, the entire weight of the carriage being 1,800 pounds. This weight of battery is adequate to drive the carriage about 30 miles on smooth, level roads without recharging. A meter is provided which shows at any time to what extent the batteries are exhausted, so there is no danger of being caught away from home without sufficient power to return; the expense of charging is very slight where the current is taken from the city mains; the cost for each full charge does not exceed 50 cents.

The motor has a normal capacity of slightly over two horse power, although in common with electric motors generally, it will respond to a demand for more than double its normal capacity when called upon to do so. The carriages are designed for a maximum speed of between fourteen and fifteen miles per hour on good roads. There are also three lesser speeds one of twelve, one of six, and one of three miles per hour. The carriage is steered with ease and a minimum of muscular effort. A powerful foot brake is provided which can be quickly and effectively applied. When leaving the carriage standing in the street or elsewhere, one can, by taking out the emergency plug, which is of a size to conveniently go into the waist-coat pocket, make it impossible for any one not possessing a similar plug to use the carriage.

The Columbia Motor Carriage.

The wheels are fitted with ball bearings, which are also used elsewhere throughout the carriage wherever of possible advantage. The tires are three-inch pneumatic, of especially durable construction, and are practically non-puncturable under any probable conditions. The frame is of special steel tubing, and all details of construction are worked out to provide the greatest strength with the least sacrifice of lightness and elegance. The carriage is built on strictly bicycle lines, and is thoroughly tested before leaving the factory.

Combination and "S" Wrenches

The Bemis & Call Hardware & Tool Co., Springfield, Mass., manufacture a line of nut, pipe, combination and "S" wrenches, saw sets, punches, etc.

The No. 45 Long Nut Combination Wrench

No. 45. Long Nut Combination Wrench

not only combines the superior qualities of a gas pipe wrench, but also all the requisite combinations of a regular nut wrench. The long nut or sleeve gives great power in the jaw, which is found to be very essential in screwing up or unscrewing square or six-square nuts after the corners are worn off. This wrench has a wrought iron bar, is case hardened throughout, and the parts are interchangeable. It is made in 10, 12, 15 and 18-inch lengths, adjustable to pipe from ¼ to 3 inches in diameter.

The No. 48 Improved Adjustable "S" Wrench is made in 8, 10, 12 and 14-inch sizes.

No. 48. Improved Adjustable "S" Wrench.

The slide of the movable jaw, by reason of the liberal length of the head of the wrench on which is the fixed jaw, does not project through one side when the movable jaw is operated to the extent that is common in some other wrenches of its class. This provides for a full bearing of the loose jaw on its seat on the head of the wrench, and yet the distance between the jaws is the same as on other S wrenches; this makes it very strong and durable. The jaw-operating nut having the knurled or roughened screw-threads, is of larger diameter than usual, and is very easily operated by the thumb. The nut is accurately constructed for engagement with the rack on the movable jaw support, thus causing a free and accurate movement in adjusting the jaw and obviating all inconvenient binding or friction of the parts.

Columbia Motor Carriage

The Pope Manufacturing Co., Hartford, Conn., have brought out the Columbia Motor Carriage, herewith illustrated. The company have been conducting exhaustive experiments for the past three years, the results of which are embodied in their handsome and practicable motor carriages now offered to the public. The carriages are finished and upholstered in the best and most expensive manner, possessing none of the awkwardness and ungraceful appearance which many people have come to associate with horseless carriages.

The experimental electric carriage was put in commission over a year ago, and since that time has been in constant use, having a mileage of about 3,500 in and around the city of Hartford. It has been driven over all kinds and conditions of roads and through deep mud and snow.

The power is supplied by storage batteries of the type best adapted to meet the required

"None Better" Steel Door Hanger

The McKinney Manufacturing Co., Allegheny, Pa., are placing before the trade the "None Better" Steel Door Hanger, No. 1 Special, as illustrated. This hanger, with the exception of the pulley, is built entirely of wrought steel, and is made with the same care

"None Better" Steel Door Hanger.

and skill as their larger hangers. It is strong enough to carry any ordinary door, but is more especially intended for use on single or small double doors. It can be used on any standard track. In size it is 5 x 11 inches.

New Gas Stove

A. Weiskittel & Son, Baltimore, Md., are introducing to the trade a new cheap Gas Stove, as illustrated. The extreme size of the stove is 22½ inches long, 11 inches wide and 5 inches high. The burner, which is an improved loose-top style, is 3¼ inches in diameter. The stove is finished in white nickel plate, cocks are polished brass and the pipe is neatly japanned. It is of substantial construction, is simple to operate and is made to sell at a low price. Catalogue showing full line of gas stoves made by the firm will be sent upon application.

Brougher Patent Skinning Knife

Nichols Brothers, Greenfield, Mass., are the manufacturers of the Brougher Patent Skinning Knife herewith illustrated. This article, which is made only in six-inch blades, is a combination of skinning knife, with cleaver or breakdown and hand-guard attachments. It meets a long felt-want in the trade and has met

Brougher Patent Skinning Knife.

with approval and commendation wherever introduced

This concern are also makers of butchers' and cooks' knives, market and packing house cleavers, abattoir and butchers' steels, grocers' cheese knives, and butter and lard spades. All knives are made from refined double shear steel, rolled expressly for this house; the blades are hand forged and not stamped out by machinery. Heavy gauge steel is used in the skinning knives to prevent springing of the blades. Particular attention is called to their market knives which are said to possess the draw cut so much desired by butchers and marketmen. All goods bearing the brand "Nichols Bros." are fully warranted against being soft or breaking from a flaw. A catalogue giving full description, illustration and prices will be sent upon request

New Gas Stove.

Marlin's Repeating Rifle, Model 1897

The Marlin Firearms Company, New Haven, Conn., are placing upon the market Marlin's Repeating Take Down Rifle, Model 1897, as illustrated. It is a take down repeater in .22 caliber, adapted to use in one rifle without altering the adjustment, either the .22 short, .22 long or .22 long rifle cartridge, together with smokeless and special cartridges with mushroom bullet in the sizes mentioned. The design of the rifle is similar to the company's 1892 model in take down form, with the following improvements, viz.: Larger side plate screw, finely tapered barrel, case hardened, receiver, adjustable rear and German silver front sights. The standard rifle will be equipped regularly with shot gun butt stock and rubber butt plate, with an option of rifle butt, if desired, without additional charge. The working parts—the carrier, breech bolt, etc.—are made of tool steel, carefully hardened, thus insuring freedom from wear and consequently a permanent adjustment. The receiver is made of a special steel, the same as is used in their high power smokeless rifles. The inside of the receiver and all inner parts are finely polished, giving a pleasing and finished effect when the rifle is taken apart, and further improving the action and rendering it easy to work. Especial attention is directed to the ease with which all parts of this rifle can be cleaned, and its adaptability to be taken apart and put into small space for carrying on summer outings. Barrels are furnished in 24, 26 and 28 inch lengths, and in round, octagon or half octagon shapes, but the magazines in all cases are 24 inches long. The weight of the rifle with a 24-inch barrel is 5½ pounds. Special styles can be furnished when desired, viz.: Pistol grips of plain and fancy walnut, various grades of engraving, plating, etc.

Fig. 1. Marlin Repeating Rifle; Method of Taking Down.

Fig. 3. Showing Right Side of Receiver with Action, Butt Stock Attached.

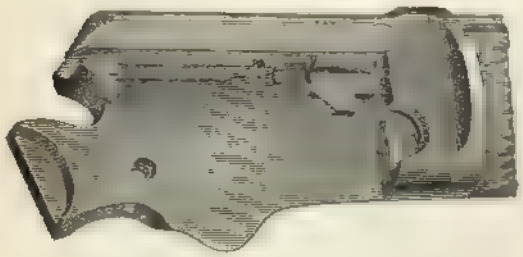


Fig. 2. Showing Left Side of Receiver with Barrel and Magazine Attached

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The catalogue of United States bicycles, which are manufactured by the Chicago Stamping Co., Congress and Harrison Sts., Chicago, is a very dainty publication of 24 pages and embossed cover. A tasty border printed in a light green upon a coated paper surrounds the text and illustrations throughout the work. The engravings have been prepared with a view to showing up details in connection with the bicycles and parts, and the proximity to the descriptive text is such as to strongly appeal to the eye of the reader. The company, who have been engaged for over thirty-two years in the manufacture of metal wares and other articles, state that they make all the vital parts of the "United States" cycles, which they fully guarantee. A ladies' and a gentleman's safety, a double diamond tandem and a combination tandem are shown.

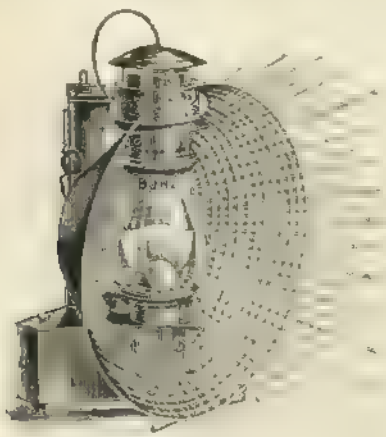
ing the same to any floor desired. The basement floor is used for their steam plant and the storing of raw stock and manufactured goods. The main floor contains their business offices and shipping department. The second floor is

Box Strapping on Reels.

occupied as a machine shop, fully equipped for the manufacture and repair of their own special machinery, dies, tools, etc. The remaining floors are devoted entirely to the manufacture of various articles.

No. 100 Tubular Headlight Lantern

The Buhl Stamping Co., Detroit, Mich., have greatly improved their No. 100 Tubular Headlight Lantern, illustrated, by adding a storm top and automatic lift, also a low down oil tank with large capacity. The lantern, which is japanned brown, uses a one-inch wick, a No. 2 burner, a No. 0 globe, and has a 16-inch



No. 100 Tubular Headlight Lantern

hood. The nickel-plated brass reflector is seven inches in diameter. This lantern will burn 48 hours in wind or rain, and on land or water, and not go out in a hurricane. A more severe test is that of placing it on top of a stationary boiler, where it will burn with safety.

A neat eight-page circular is put out describing this lantern, in addition to several other styles of dash lamps and lanterns

Lawn and Garden Rakes

The New "Gibbs," Lawn and the "Boss" Garden Rakes manufactured by the Gibbs Mfg. Co., Canton, Ohio, are thoroughly constructed. Special pains are taken in the tinning, pure block tin being used. This not only gives the goods a most brilliant finish, but they will not tarnish and turn dark when carried in stock. The company reports large sales, and letters from the trade attest the high esteem in which these rakes are held. Single and double blade Post Hole Diggers, which include the "National," "Columbia," "Gibbs," "Imperial," "Canton" and "The Hustler," are offered the trade. The "Ohio Girl," a reversible Lawn Rake, has an 18-inch head and twenty coppered steel wire teeth; it is a trade as well as a grass catcher.

Hot Weather Advertising

Under the title of "Hot Weather Comforts," J. B. Shannon & Sons, manufacturers and dealers in hardware at 1020 Market St., Philadelphia, Pa., issue a pocket size, 28-page catalogue of hot-weather hardware. The little labor and annoyance-saving devices—things that don't cost much, but make the work a little lighter, the house a little cooler, and life a little more bearable in consequence, are presented. It is the desire of the firm that their customers consider the little book a series of hints rather than a catalogue. Lawn mowers, grass hooks, garden hose, hose reels, wire netting, window screens, water coolers and filters, ice cream freezers, ice chests, refrigerators, ice shaves, gas stoves and fruit presses are among the articles shown. In the interest of their bicycle department a series of newspaper advertisements have been run. In style and arrangement they widely differ from what is ordinarily seen in the daily newspaper. They combine the striking features of type setting seen in newspaper advertisements with the eye catching and pleasing illustrations used in the literary monthly magazines. They have proved trade winners, fully justifying the time and thought expended upon them.

The Angle Lamp Co., 76 Park Place, New York City, call the attention of the trade to The "Angle" Lamp, which they designate as the "great summer lamp," on account of its throwing off no more heat than gas. It is especially adapted for churches, stores, homes, etc. The makers remark that "it sells and

Cary Mfg. Co.'s New Building

We illustrate herewith the new plant of the Cary Manufacturing Co., formerly of 5, 7 and 9 Elm St., New York City, now removed to their new six story and base building located at 19 and 21 Roosevelt St., near Park Row

Their business was begun in a very small way in 1889; but now occupies the greater portion of a building 50 feet front and 100 feet deep. An important feature of the business is the manufacture of the Universal Box Strapping and other kinds of box strapping, together with pail clasps, box corners, and a variety of special metal goods, which are being added to their line continually. Their manufactures are covered by some twenty-five different patents, both in this country and abroad all of which are the inventions of Mr. Cary, the president of the company. The facilities for the economical manufacture on a large scale of their line of goods are very complete, the building being equipped with a 125 horse-power steam plant and a capacious Otis elevator capable of receiving a truck loaded with raw material and carry-

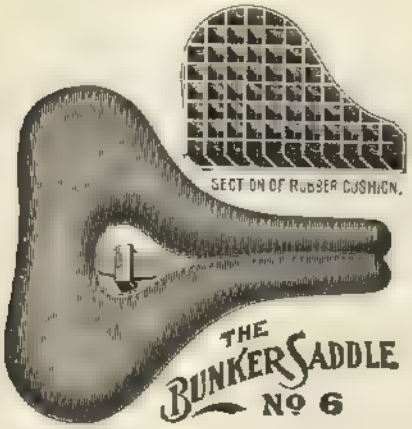
short hand and take it back also. In setting the hands they are always turned backward. The back of the instrument shows the permanent or 10,000 record. The 10,000 mile register

"Record" Cyclometer.

can also be set back by taking off the cover and turning the gears to zero. The device is well made, neatly finished and thoroughly tested before leaving the factory. The instrument weighs only three ounces and is made of but few parts.

The "Bunker" Bicycle Saddle

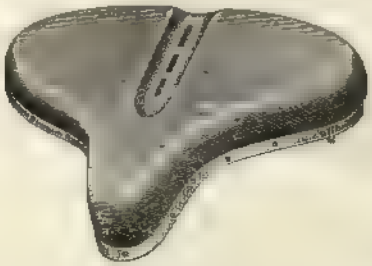
The Bunker Saddle Co., 208 and 210 East Lake St., Chicago, Ill., manufacture a line of bicycle saddles, one of which, the "Bunker" No. 6, is shown herewith. This saddle is provided with a yielding rubber cushion, one inch



thick over its entire surface, having at each side of its center a depression to receive the pelvis bones, and an opening from the center to the front to relieve all pressure from the central parts. The base plate is formed to what is stated to be the most perfect saddle shape, and the rubber cushion is neatly covered with selected calf skin in black or tan. This saddle is not inflated. The company make several other styles of saddles, some of which are pneumatic. The No. 6 weighs two pounds nine ounces. The rubber cushion gives a pneumatic effect to the rider.

"Sims" Pneumatic-Edge Bicycle Saddle

The Sims Saddle Co., Canton, N. Y., are offering "Sims" Pneumatic-Edge Bicycle Saddle, as illustrated. The base of the saddle is constructed of three layers of veneering, glued up, with the grain running crosswise. On top of the base is secured a felt pad, 1¾ inches thick, which terminates short of the front



General View "Sims" Saddle No. 1.

edge of the base. A hollow space is thus left at the front edge of the saddle, and upon each side of the centre at the points where the thighs of the rider would bear. Within this space is an inflated rubber tube or sack, protected by a textile bag. The leather cover of the saddle is left full at the front edge of the

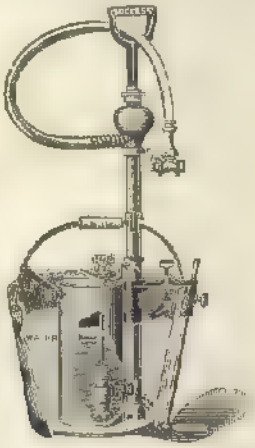
Sims Saddle No. 1, Plan View with Cover Removed

saddle, so that when the tube or sack is inflated the cover will be projected three-quarters of an inch in advance of the front edge of the base, thus receiving the pressure of the thighs and preventing their bearing against the edge of the base. By this construction there is no pommel to chafe the rider, a firm, broad, pad-

With the exception of the base, the entire sprinkler is made of brass, highly finished and nickel plated. The stand, or base, is of steel-tinned wire, eliminating the liability of breakage, and its construction is such as to allow it to be readily attached to the sprinkler. It can be moved about on the lawn at the pleasure of the user.

"Success" Kerosene Emulsion Sprayer

An ingenious contrivance in the line of spraying apparatus is the "Success" Kerosene Emulsion Sprayer, manufactured by The Deming Co., Salem, Ohio. Preparing and applying kerosene emulsion according to the old method is a laborious operation. With the machine here illustrated the oil and water are thoroughly mixed automatically in any desired proportion while pumping. The apparatus can be used to spray in the usual way by detaching



"Success" Kerosene Emulsion Sprayer

the kerosene tank. All working parts are of brass, the oil tank being made of copper.

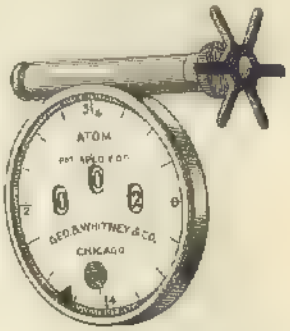
An indicator with gauge plate shows the proportions of oil and water for various purposes. Full directions accompany each machine

Kerosene is an effective destroyer of plant lice, caterpillars and their larvæ, scale insects on leaves, the bark, mites in poultry houses, etc.

A neat four-page circular is being distributed by the Baldwin Refrigerator Co., Burlington, Vt. The first page has simply the trade-mark of the company and the request to "Turn over." The second, third and fourth pages are occupied by brief but forceful testimonies as to the value of the "Baldwin" refrigerators. The testimonials are all of very recent date, giving added interest. They come from hardware dealers, fancy grocers, senators and from the superintendent of the Florida East Coast Hotel System, comprising nine of the best hotels in that section.

The "Atom" Cyclometer

Geo. B. Whitney & Co., 69 and 71 West Jackson St., Chicago, Ill., manufacturers of metal novelties, are offering the "Atom" Cyclometer, as illustrated. As the name indicates, the instrument is small, weighing with all attachments only one ounce. The device registers correctly and continuously up to 1,000



"Atom" Cyclometer.

miles and repeats. The arrow at the edge of the dial shows divisions of a mile. The aluminum dial is covered with transparent "Pyralin" instead of glass, which, it is asserted, cannot be broken. The makers guarantee that if the "Atom" is accidentally broken they will repair the same free of charge.

"Record" Cyclometer

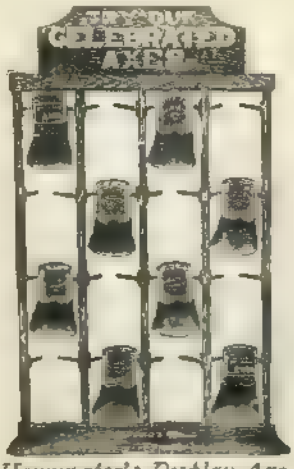
H. R Hamilton & Co., 67 and 69 Lake St., Chicago, Ill., are offering the cycle trade the "Record" Cyclometer, as illustrated. The construction of the instrument allows of a permanent or 10,000 mile record and then repeats, and also a trip record which registers to 100 miles and then repeats. The trip register can be instantly set back without affecting the 10,000 mile record. The large hand on the face of the dial records the miles while the short hand records fractions of a mile. The dial is of sufficient size to be easily read from the saddle. By turning a small knob on the back of the cyclometer the trip indicator is set to zero; by pulling on the knob and turning at the same time the long hand will engage with the little lug on the

section has a small hole, which allows the water to run out, making it anti-freezing.

The company make the L. X. L. iron platform, 33 x 35 inches, and weighing 80 pounds. It is corrugated so as to drain water or rain away from the cistern; the corrugations also prevent slipping. Its construction is such that it will fit the neck of every cistern, and its use insures cleanliness.

Harrington's Display Axe Rack

The Weedsport Drill Co., Weedsport, N. Y., are offering the trade Harrington's Display Axe Rack, as illustrated. This rack, which was patented March 23, 1897, is designed for sampling axes on a counter, or it can be attached to a side wall. It has spaces for sixteen axes. Interchangeable brackets are supplied, also extra hooks for handled axes. The rack is made of hard wood with an oil finish and an embossed sign at the top lends attractiveness to the display. The rack shows the maker's brand in front, the cost and selling



Harrington's Display Axe Rack.

prices being placed on the back. Axes can be readily taken out and replaced from either front or rear.

Levy Cycle Clock

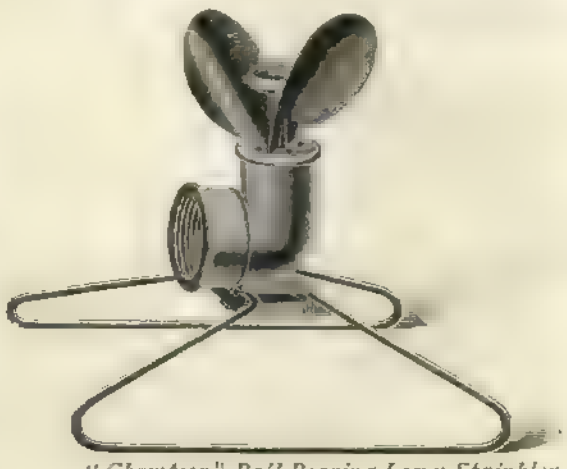
The Levy Cycle Clock Co., 1817 Ridge Ave., Philadelphia, Pa., are offering the Levy Cycle Clock, as illustrated. The clock is provided with second, minute and hour hands, sets by means of a knurled cap at the back, and winds by means of a lever and ratchet; the latter can be accomplished without detaching the instrument from the bicycle. The movement, which is known as the "Marine," is encased in a nickel case. The clock is 1⅛ inches thick, has a 2-inch dial, and weighs about 5 ounces. It is protected from jarring by a flexible leather carrier with a rubber guard ring. They are

Levy Cycle Clock.

warranted good time keepers, and are said to run correctly on or off a cycle. The method of fastening to a bicycle is shown in the illustration. The clock can be used equally as well on a carriage, a desk, or hung on the wall.

"Champion" Ball Bearing Lawn Sprinkler

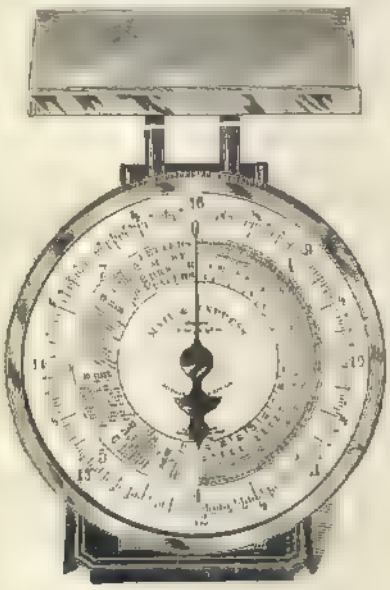
The Champion Lock Company, Cleveland, Ohio, are placing on the market the "Champion" Ball Bearing Lawn Sprinkler, as illustrated. Special attention is directed to the ball-bearing features and the ingeniously constructed stand. A great drawback in the use of many revolving lawn sprinklers has been that within a short time the bearings become irregularly worn, causing binding. In the "Champion," it is asserted, this difficulty is overcome by the use of ball bearings, which permits of the operation of the sprinkler with a minimum amount of friction, the sprinkler working at a very low water pressure. The balls are made of ball metal and are rustless.



"Champion" Ball Bearing Lawn Sprinkler.

The "Mail and Express" Scale

The Pelouze Scales & Mfg. Co., 133 to 139 S. Clinton St., Chicago, Ill., have brought out the "Mail and Express" scale, as illustrated. This scale will weigh express packages by half ounces up to 16 pounds; it also indicates on the dial the exact cost of postage in cents on



The "Mail and Express" Scale.

letters, books, merchandise and newspapers, up to four pounds. The dial also contains complete postal laws for different classes The scale is made of steel, beautifully japanned and striped. The dial is 7½ inches in diameter, with glass sash and nickel trimmings. The special glazed tile top plate is 6 inches square.

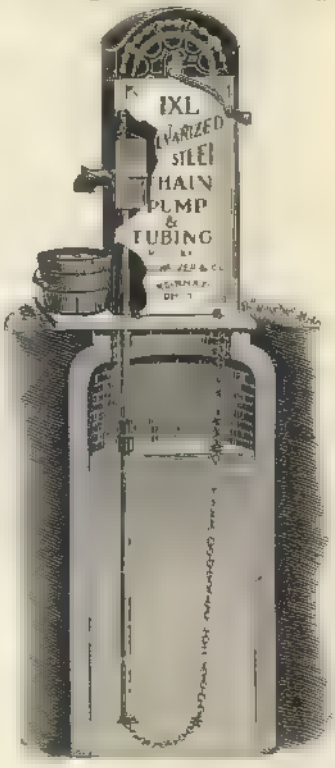
Cleveland Stamping & Tool Company

"Solid Steel" Lava Ware is the title of a new catalogue issued by the Cleveland Stamping & Tool Co., Cleveland, O. The Lava Enameled Ware is furnished in any color desired. Blue and white, and royal purple and white only are carried in stock; orders for any size being promptly filled. In connection with the illustrations there are presented the different sizes and prices. The goods shown include seamless spiders, griddles, cake griddles and broilers; "Solid Steel" seamless taper stove kettles, Maslin Kettles and stew pans; seamless kettles with flat bottoms and straight sides, seamless pots with round bottom and straight sides; stirring bowls, the "Cleveland" tea kettle, hot water urn, spittoons, etc. A line of hotel ware comprising long handle spiders, and extra heavy tinned stew pots, are also shown. The "Cleveland" lava enameled filter is illustrated and described at the end of the catalogue. The publication, which is pocket size, thirty-two pages, has been prepared with a great deal of care and the result is alike pleasing to the eye and satisfactory for use by the dealer.

I. X. L. Steel Chain Pump

O. P. Schriver & Co., Cincinnati, O., manufacture the I. X. L. Patent Galvanized Steel Pump, Curb and Galvanized Steel Tubing, herewith illustrated. The makers in placing this apparatus before the trade, call attention to its superiority over the old wooden suction and iron pitcher pumps, as there are no valves to get out of order or dry out; it will always throw a large stream of water.

The I. X. L. galvanized steel tubing is made



I. X. L. Steel Chain Pump

of No. 24 gauge galvanized steel; it will not rust, and does not make the water taste as would tubing. This tubing consists of a reservoir and a funnel, joined together with a coupling, thus making the complete length of tubing ready to go into the cistern. The reservoir

"Spangler" Patented Cycle Wagon

The Tricycle Manufacturing Co., Springfield, O., are now the sole manufacturers of the latest patented device in vehicles for the use of boys and girls, as embodied in the "Spangler" Cycle Wagon, illustrated. This wagon is made of the best material, and its mechanical construction is after the most approved methods. The axles are of high grade steel, with spindles milled and fitted by special machinery. The wheels are of steel, reamed for neat fitting and easy bearing, and will carry 300 pounds with safety.

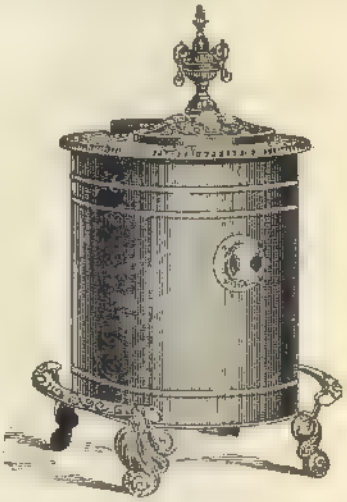
The brackets and supports are of the best malleable iron, and are carefully fitted. The pedal cranks are of Bessemer steel formed with dies made for the purpose. The wagon is propelled by pedals connected with the rear axle by sprockets and chain, thus providing a movement that is easy and powerful to propel on ordinary roads. The guiding device is simple, being a joint or hinge in the middle of the tongue, allowing it to turn back over the body, within reach, so that the rider can guide with ease and safety.

The body of the wagon is 15 x 36 inches, is firmly and neatly made, and is painted in various colors. There is a trap lid in the bottom, which being lifted provides a seat for the rider, leaving an opening in the bottom for propelling. The front wheels are of a height to pass under the body for short turning.

The company report a larger number of inquiries for this vehicle than for any machine they have yet offered. The wagon can be retailed for $3.50 for steel tire, or $4.25 for rubber tire, and afford the dealer his usual per cent. of profit. See advertisement on page 871.

Terrell's Tubular Heater

Terrell & McClure, St. Louis, Mo., are offering Terrell's Tubular Heater, illustrations of which are presented herewith. This wood heater is airtight, giving full control of the fire at all times. By closing the draft damper the fire can be retained for twenty-four hours or longer. The draft is taken on to the fire through a hot blast flue in the front of stove. The air, taken in this way, is heated to about 600°. A



General view Terrell's Tubular Heater.

hot draft will keep the fire burning steadily whether the amount of the fuel is large or small. An even temperature throughout the entire space heated is obtained by the circulation of air through the tubes or flues on each side of the body. It is stated that by actual use it has

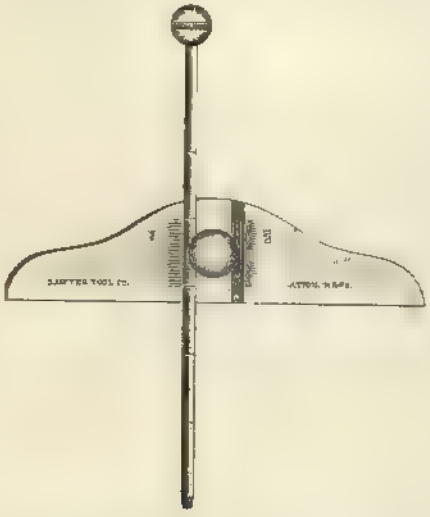
Broken view Terrell's Tubular Heater.

been found where three rooms are heated with the tubular heater the temperature is not more than 2° lower at the farthest point from the stove than in the room where the stove is located even in the most severe weather. The constant and rapid circulation prevents the colder

air laying close to the floor while the upper part of the room is over-heated. An unobstructed circulation of air is brought into contact with every part of the stove. The stove does not puff nor smoke even when the feed door is open. It is claimed to require less attention than a hard coal base burner. Ashes have to be removed only three or four times during the season. The stove is supplied in seven styles, ranging from No. 224, which is 23½ inches long, 17 inches wide and 22 inches high, with eight circulating flues, American Russian iron body, nickled foot rails, and 3,400 square inches of radiating surface, to No. 130, which is 29½ inches long, 21 inches wide and 28 inches high, with twelve circulating flues and 4,800 square inches of heating surface. No. 224 is suitable for heating one large or two small rooms, and No. 130 is adapted for heating stores, schoolhouses and large offices. Janney, Semple & Co., of Minneapolis, Minn., are the Northwestern sales agents. Rector & Wilhelmy Co., of Omaha, Neb., are sales agents in western part of Iowa, Nebraska and Colorado

New Depth Gauge

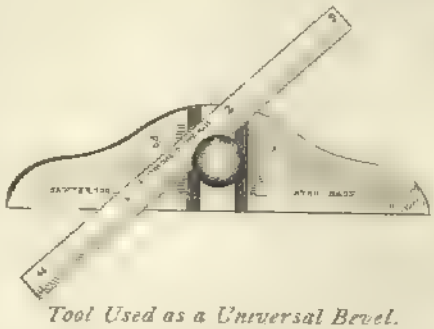
The Sawyer Tool Co., Athol, Mass., manufacturers of fine tools and hardware specialties, are putting on the market a new Depth Gauge, as illustrated. This tool was designed to overcome many of the objections to the Depth



Depth Gauge.

Gauges now in use. It is a well-known fact that the majority of the work for which such tools are used is in gauging the depth of drilled holes and small cavities; for that reason a round bar with a small point is preferable, as you can strike the exact depth caused by the point of the drill, or by moving it to the side of the hole you can get the shoulder depth; with a square or oblong gauge bar this cannot be done so closely, but the fact that these are commonly graduated brings them into favor on that account.

The improvement in this tool lies in the fact that the round bar is divided by graduations



Tool Used as a Universal Bevel.

that extend completely around it. The outer edges of the grooves are graduated in the finer divisions of an inch to correspond to the divisions on the gauge bar, so that when the point of the gauge bar is flush with the straight or working edge the first graduation on the bar matches the first graduation on the stock, so that in any depth gauged the semi-divisions of an inch can be counted and the fractional part, if any, can be added and the complete depth told quickly without recourse to other means of measuring. Each slot has different divisions of an inch on its outer edge and the bar can be instantly changed from one to the other as desired. They are graduated in 64th and 100th and 64th and 50th. The round gauge bar can be replaced by a narrow rule which makes a very handy universal bevel for transferring angles and to be used in getting the draft of patterns, etc.; altogether it makes a very desirable tool and one which all mechanics will thoroughly appreciate.

Kitchens Up to Date" is the title of an eight-page, 3½ x 6½ pamphlet issued by the Standard Lighting Co., Cleveland, O. In a prefatory note the assertion is made that kitchens ought to be thoroughly equipped with money-saving, time-saving and labor-saving appliances. The "New Process" Blue Flame Oil Stove, it is pointed out, has many meritorious points commending it to the housewife.

....There can be but one BEST....

GEM SPRING HINGES

have been on the market **for years.** Have always given satisfaction and stood the test **against all competitors.** Order and **INSIST ON GETTING GEM.** See that an inferior make is not substituted. . .

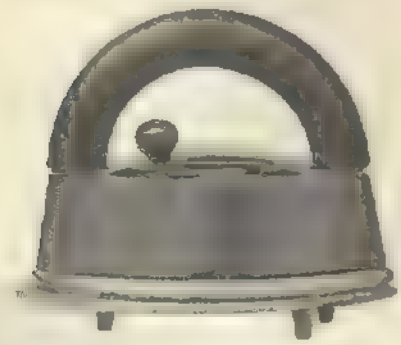
MADE IN ALL FINISHES

Manufactured by

VAN WAGONER & WILLIAMS HARDWARE CO.

CLEVELAND, O., and NEW YORK

FOR SALE BY LEADING JOBBERS



ATTENTION!

Jobbers of Holiday Goods

We wish to call your attention to our

"Baby" Asbestos Sad Iron

The Baby's Delight — *The Young Lady's Friend*
The Girl's Toy — *The Woman's Helper*

You will find it to your advantage to see our Iron and get our prices before placing your orders for Holiday Irons.

N. B. A sample, with prices and discounts, will be sent free of charge upon request, or we will have one of our representatives call upon you.

ASBESTOS SAD IRON COMPANY
Stoughton, Wis., U. S. A.

Good Advice

is generally costly, but the best advice on Store Arrangement and display of stock is in the AMERICAN HARDWARE STORE. Three Dollars, postpaid; 450 pages, 500 illustrations. Address

Hardware Dealers' Magazine,
271 Broadway, NEW YORK.

Prompt deliveries. It will pay you to get agency. Agents wanted for our

HIGH GRADE

POPULAR PRICE

$65 CYCLES $50

Superb tool steel bearings, semi-flush connections. Every part warranted

Made by THE BOSTON MACHINE CO.
23 Devonshire St., Boston.

MORRILL'S PERFECT SAW SET

No. 95

This **Saw Set** has developed with time and now it is acknowledged among all classes of mechanics to be the only truly scientific Saw Set ever produced.

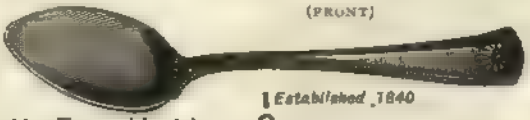
CHARLES MORRILL, 35 Warren St., New York

Highest Grade of . . . .

Silver Plated Ware

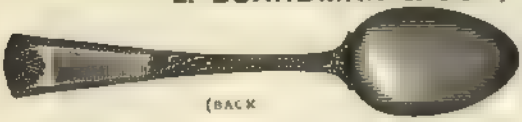
In Spoons, Forks, Etc.

Manufactured by



Established 1840

L. BOARDMAN & SON, East Haddam, Conn.



Also Nickel Silver Flat Table Ware and Britannia Spoons

Write for Catalogue and Prices

Hand Wagons . . .

SOMETHING everybody has use for. Carpenters, Painters, Masons for carrying tools, Merchants use it for delivery purposes, while Farmers, Gardeners and Fruit Growers find it invaluable in a thousand ways.

Steel wheels, steel or wood handles, and steel axles, body well made of poplar nicely painted. . . . .

LIGHT, STRONG AND VERY DURABLE

WE MAKE THE FOLLOWING SIZES:

Size.	Size of Box	Diam of Whl.	Size Axle.	List.
No. 1.....	20x31 in 8 in deep	30 in	1⅛ round	$6.00
No. 2 ...	20x31 in. 8 in deep....	36 in	1⅛ round	6.30
No. 3.	22x36 in 9 in deep	36 in	1⅛ round	6.60
No. 4.	27x44 in 10 in deep	42 in	1⅛ round	7.20

SPECIAL DISCOUNT TO THE TRADE

Write Us for Net Prices. We are "in it."

DAIN MANUFACTURING CO., CARROLLTON, MO.

LAWN WEEDER

Patented)

Hand'e 4 ft. long

Only practical device on the market. Agents wanted. Price on application.

THE CLEVELAND LAWN WEEDER CO

1622 NEW ENGLAND BLDG., CLEVELAND, OHIO

MAKE ICE CREAM

in 5 minutes. Best purest cheapest. From milk only—never ice and salt. Made easy with

Polar Star Instant Freezer.

Rapid, clean, economical. Always in order. Freezes with more hard dry and smooth. IT DON'T SALT TIA

Live agents wanted everywhere.

Polar Star Mfg. Co., 231 Levant St., Phila., Pa

Beloit Hose Mender and Coupler

This Coupler relieves pressure on end of hose and keeps it dry, thereby preventing rotting. Will stand 200 lbs pressure. Brass connections, simple and durable. Sample Mender postpaid 25c. Sample Coupler for hose by front and nozzle, 35c. postpaid. Send for circular. Wholesale prices to the trade quoted on application.

THE GODDARD & ALLEN CO.

No. 216 State Street, Beloit, Wis

Give Me a Chance to quote you prices on your bent or straight-wood specialties

HARD MAPLE BICYCLE GUARDS IN STOCK

D. B. KEHLER, Fort Wayne, Ind.

Wholesale Hardware Houses

The following Wholesale Hardware Houses invite correspondence from the Retail Hardware Trade, and will be pleased to quote prices upon application.

ALABAMA.
SELMA: Ben J. Schuster.

ARKANSAS.
LITTLE ROCK: Fones Brothers' Hardware Co.

COLORADO.
DENVER: The Denver Stove & Hardware Co.

DISTRICT OF COLUMBIA.
WASHINGTON: F. P. May & Co.

FLORIDA.
JACKSONVILLE: The S. B. Hubbard Co.
ST. AUGUSTINE: C. F. Hamblen.

GEORGIA.
ATLANTA: The Clarke Hardware Co.

IOWA.
SIOUX CITY: Knapp & Spalding Co.

ILLINOIS.
CHICAGO: Hibbard, Spencer, Bartlett & Co.

KENTUCKY.
LOUISVILLE: W. B. Belknap & Co.

MICHIGAN.
SAGINAW: Saginaw Hardware Co.

MINNESOTA.
WINONA: R. D. Cone Co.

NEW JERSEY.
NEWARK: Roe & Conover.

OHIO.
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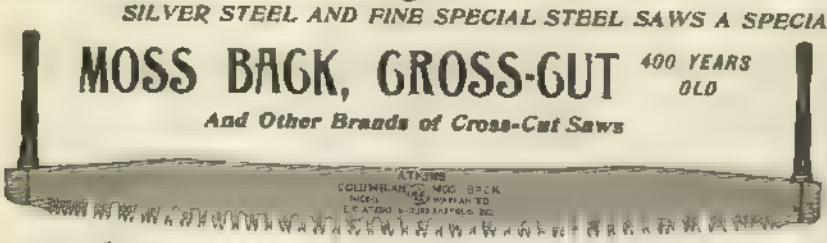

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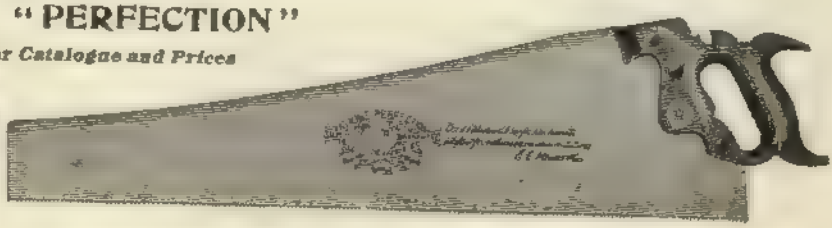

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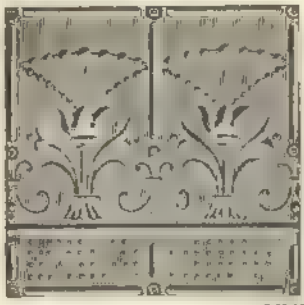

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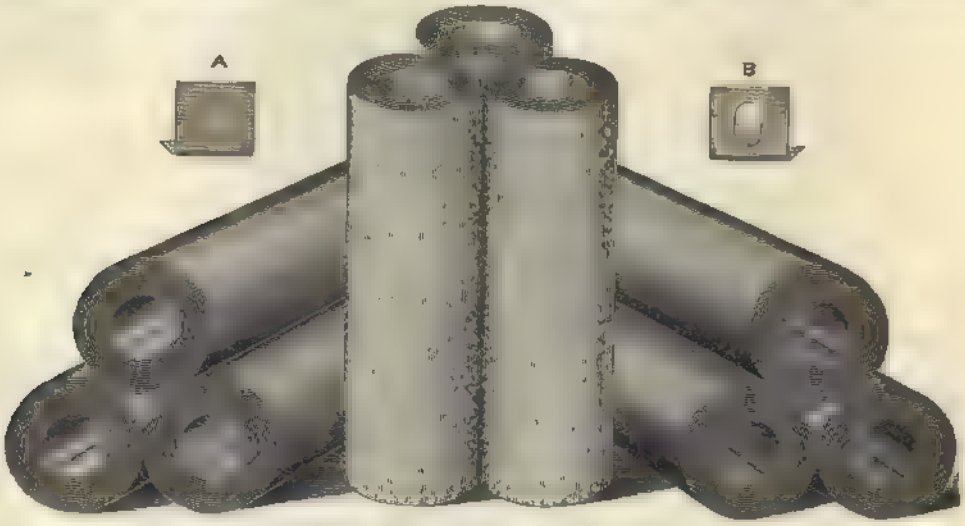

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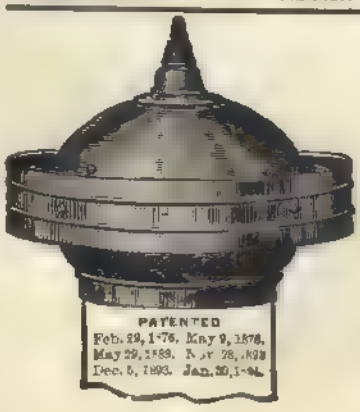

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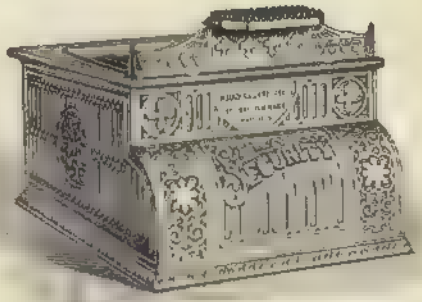

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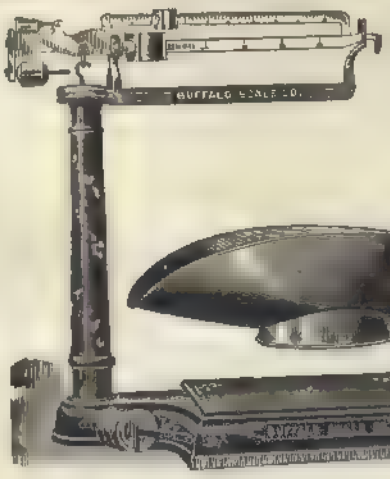

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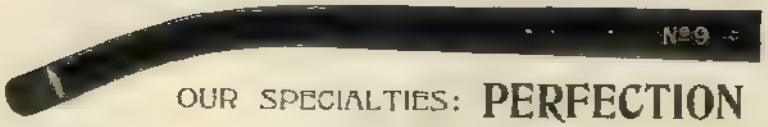

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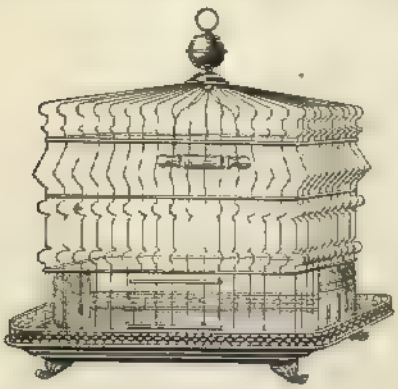

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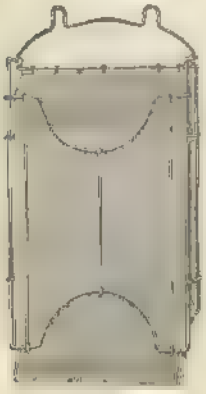

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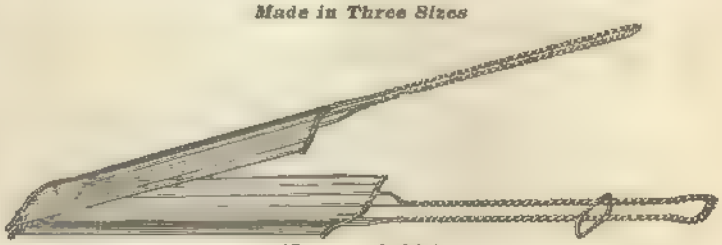

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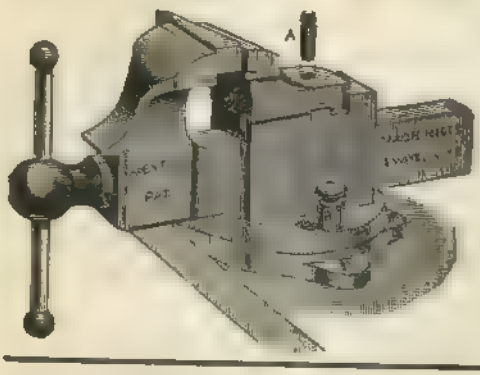

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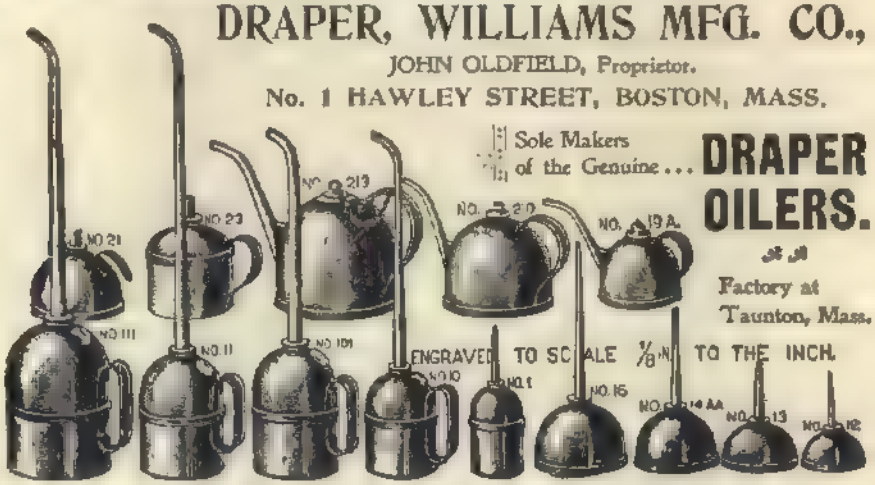

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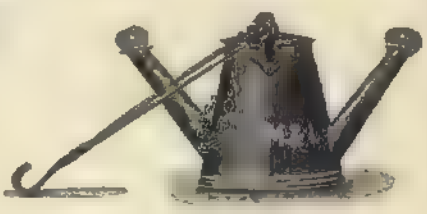

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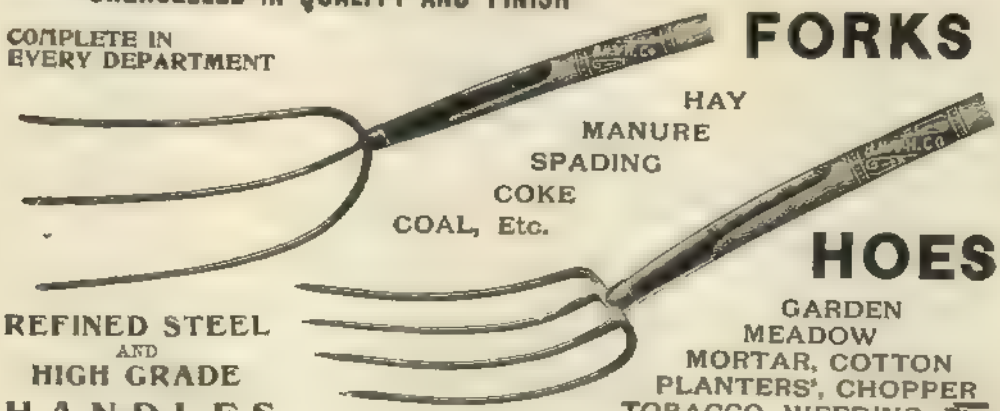

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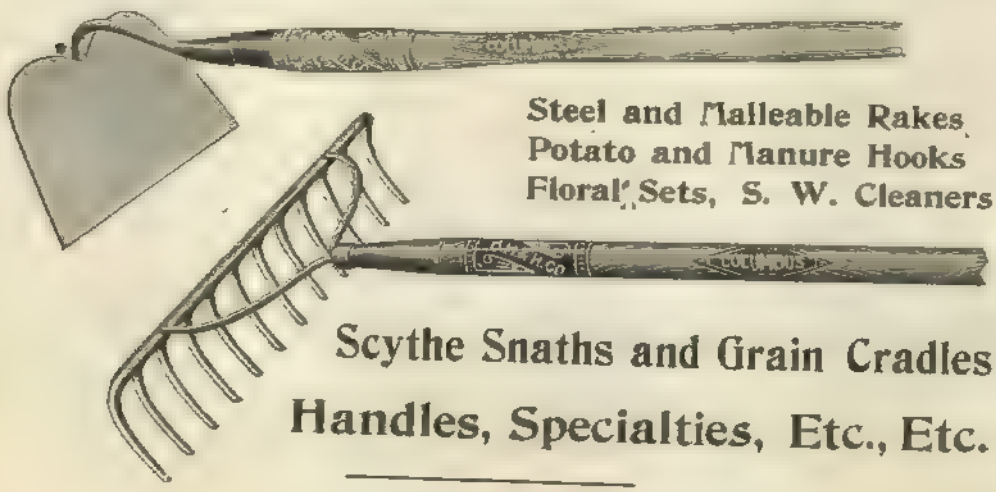

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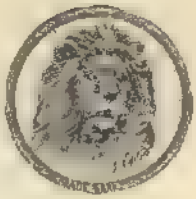

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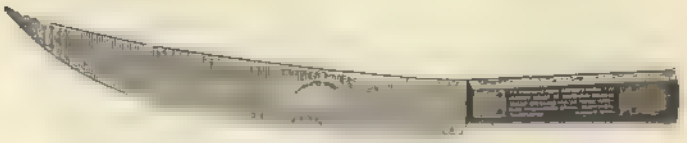

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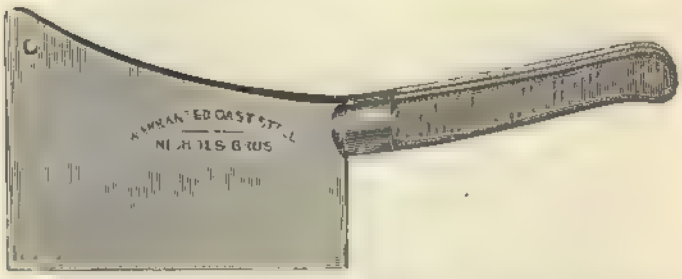

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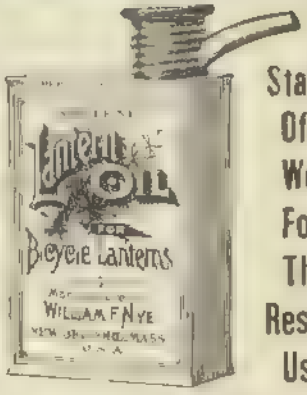

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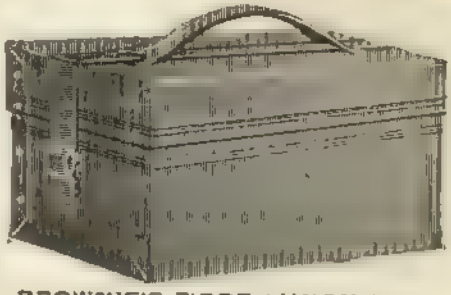

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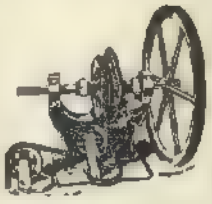
WIRE CLOTH AND WIRE GOODS

Wickets, Grills, Artistic Metal Work, Etc., Etc.

SCHEELER'S SONS

BUFFALO, N. Y.



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Self-Retaining

DUMBWAITERS

MADE ONLY BY

J. G. SPEIDEL,

Reading, Pa.

The best on the market. All Hardware Dealers sell them.

Star ★ Lathes

Foot power Screw cutting Automatic Cross feed

9 and 11-inch Swing.

—New and Original Features.—

Send for Catalogue B.

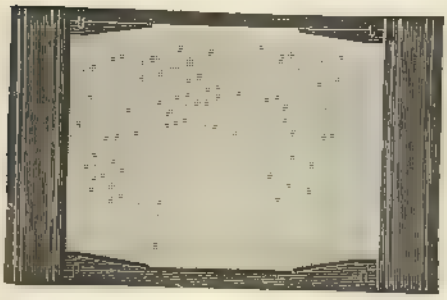
SENECA FALLS MFG. COMPANY, susq Water St., Seneca Falls, N.Y.

WE'R THE PEOPLE

....FOR....

Adjustable Window Screens and Screen Doors

OF EVERY VARIETY AND SIZE



You had best consult our catalogues before placing your order for screen goods.

We offer special inducements to large Jobbers.

Send for Catalogues Nos. 32 and 33.

"THE LITTLE WONDER" WINDOW SCREEN

Has the largest sale of any other screen of its class that is manufactured.

Remember, we sell these goods —we don't keep them

EDWARD DARBY & SONS

Mention Hardware Dealers' Magazine. *233-235 Arch Street, Philadelphia, Pa.*

For Butler's Pantry

and all other swing doors the best device is . .

Bardsley's Checking Spring Hinge

It goes in the sill under the door and works in oil. It closes the door gently and without noise, and stops it at once at the centre.

The BARDSLEY WOOD DOOR KNOBS

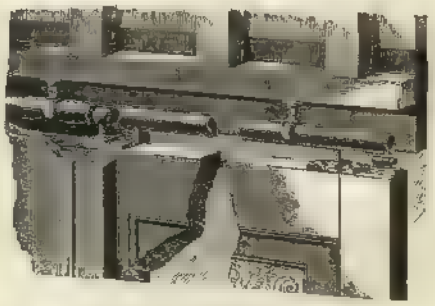
are undoubtedly the best. They retain their handsome finish, and the heads never come off. Catalogue on application.

J. BARDSLEY, 149 Baxter St.

NEW YORK

...McCABE...

Ball Bearing Door Hangers



Simplest, Cheapest, Best

Adjustments above and below the track without removing the door.

After trying this you will use no other

Send for catalogue or order a set at once and see why it is without an equal.

McCabe Manufacturing Co.

532 to 542 West 22d St., NEW YORK

Pat'd Jan. 21, 1896

Combination SCYTHE and AXE RACK

Two in One

Send for descriptive circular and price

The rack is 4½ feet high and two feet in diameter, finished in natural wood and gold.

The rack revolves by having an iron turn table underneath the circular board, and it does not require 2 pounds of pressure to turn it when filled. The Scythe rack holds 4 dozen Scythes, and when Scythe season is over remove the upper plate by taking out 4 stove bolts and put the axe plate on, and then you have a rack that will accommodate 16 handled Axes above, which cannot fall or get out of place, and 16 Axes below that set over lugs that extend into the eye of the Axe. Will hold any weight Axe.

We will send you a rack, and if it does not please, send it back.

Pat'd Apl. 16, 1895

Manufactured

Zimmerlin Bros.

Lyons
N. Y.
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Free Boxing Lessons

The self-selling powers of effectively arranged Samples in an "Up-to-date" Hardware Store can scarcely be overestimated, and the outlay of time and money required to secure a handsome display is amply justified by its earning capabilities.

THE

"Perfect" Shelf Box

for the equipment of Sample-Shelving lays claim to the following desirable features:

Notably handsome finish.
Great Economy of Shelving space.
Perfect Protection for its Contents.
Lightness, Strength and Durability—and, in addition to the above,

The cheapness of surpassing excellence

THE

"Perfect" Shelf Box

will well repay your personal investigation of it, by means of the Circular I shall be pleased to mail you.

C. P. MOORE

RAVENSWOOD, W. VA.

The Dwight Slate Machine Co.

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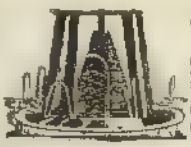
Make Drills for Hardware and Novelty Manufacturers; also Special Machinery

Catalogue Free



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For Gasoline or Gas Stoves

Only Toaster that has given Perfect Satisfaction to the Vapor Stove Trade. Toasts evenly, quickly, no smoke or smell. Harkins & Willis, Ann Arbor, Mich.

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We have the neatest and most complete weekly expense account book ever prepared for this purpose Used by over 1,000 leading establishments Send for free sample and price list. Prices reduced

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Are Always Pleased to Introduce New Goods.

110 to 114 Coombe, **DUBLIN, IRELAND**

SEED'S REVERSIBLE SELF-CLEANSING. **WATER FILTERS**

Brass, Nickel Plated

No. A1 Per Dozen $4.00 No. 3 Per Dozen $1.50
No. 2 " " 2.50 No. 4 " " 1.00

In 5 Gross lots 10 per cent off.

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21 and 23 Centre St. *NEW YORK*

Do You Want **FOREIGN TRADE?**

We have special facilities for creating or extending trade in **ENGLAND.** Write for particulars.

W. HOUGHTON CO 95 Regent St, London, Eng.

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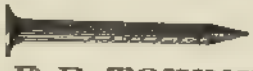

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New Brighton, Pa.

Fruit Huller

Patented by us in Canada and U. S., Oct 30, 1894

All infringers prosecuted. State Rights for sale Agents Wanted. Prices on application

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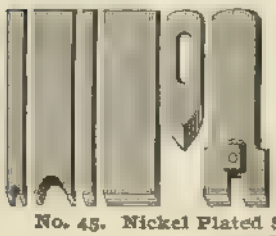
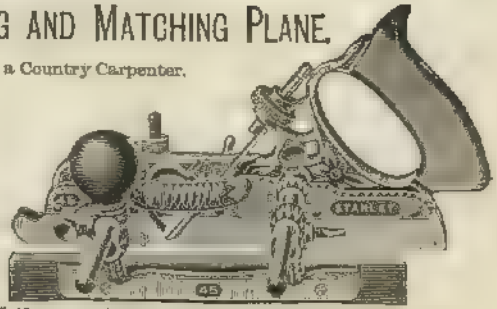
STANLEY'S ADJUSTABLE

BEADING, RABBET, SLITTING AND MATCHING PLANE.

"A Planing-Mill within itself,"—says a Country Carpenter.





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SOLD BY ALL HARDWARE DEALERS.

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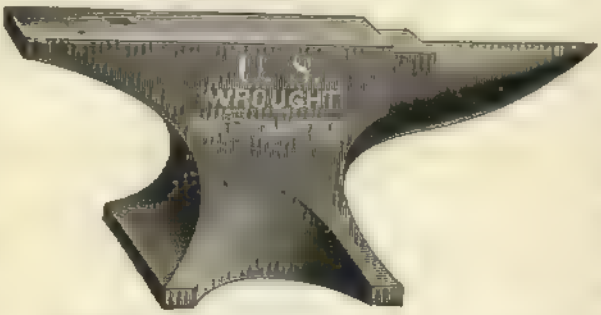
Every "U. S." Anvil is Warranted. Only one Weld.



A Wholly American Product. "U. S." Anvils for Americans.

IRON, STEEL, NAILS

CARRIAGE, WAGON AND HEAVY HARDWARE
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BLACKSMITHS' TOOLS AND MACHINES

Fine Wood Material

General Agent "TANITE" Emery Wheels and Machines

The

EASTWOOD

PATENT COPPER

Disc Valve.

EXAMINE THE HANDLE WHICH IS ALSO PATENTED.

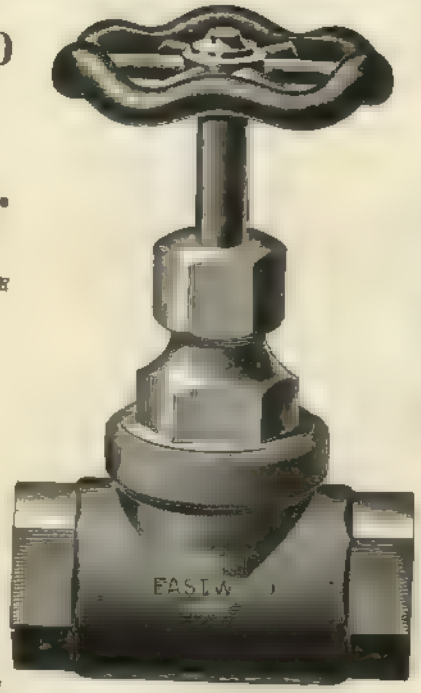
Dealers

Should carry in stock these

Valves

and consumers should use them for the

Best results



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Wire Mfg. Co.,

BELLEVILLE, NEW JERSEY.

Manufacturers of

VALVES

In Bronze, Brass and Iron.

Plug Cocks,

Whistles,

Steam

Fittings.

The Copper Disc is removable and renewable. The Valve is **absolutely tight** and possesses features certainly novel and **superior to any Valve on the market.**

The NEW YORK...

SAFETY DUMB WAITER

Patented in the United States, Canada and Great Britain

The original Dumb Waiter put on the market so as to be sold by the Hardware trade.

Durable, economical, noiseless, cheap, cannot fail.

Its equal has never yet been produced.

Is packed one complete set of fixtures in a box, with full directions.

One size only for all ordinary size well-holes.

Can be sold same as any builders' hardware.

Any carpenter can erect them.

Models and Catalogues furnished free to the trade.

Many thousand sets in use all over the world.

More than 50% of the Hardware Trade Sell Them

Do You? IF NOT, WHY NOT? PLEASE WRITE US.

THE STORM MFG. CO.

NEWARK, N. J., U. S. A.

Makers of

Hand and Belt Power Dumb Waiters and Elevators, Basement, Carriage and Invalid Lifts

THE **BIRD SHEATHING BUILDING AND INSULATING PAPER**

For Sheathing frame buildings and under floors.
The best lining for Ice Houses and Refrigerators.

WATERPROOF, ACID PROOF, ALKALI PROOF,
AIR-TIGHT, ODORLESS, CLEAN TO HANDLE,

BIRD PAPER M'F'G CO.,
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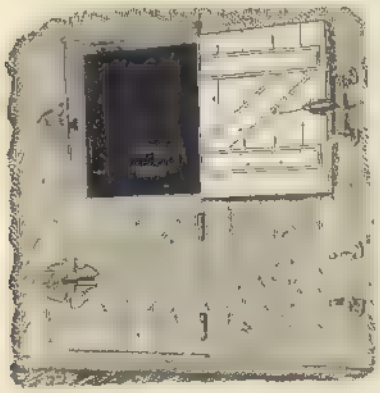


THE "H. W." DOOR LATCH.

Best thing in the world for doors on all buildings.

It has no equal for use on barn, stable or entry doors, ventilators, box-stalls, cattle barns, wagon sheds, corn cribs, chicken houses, coal houses, summer kitchens, etc., and gates of all kinds. It will hold them open or shut.

Holds stable doors open, preventing them from slamming on stock when taking them in or out, which has crippled thousands of valuable animals.

Keeps doors open for ventilation. No more use for stones or chunks to prop them open. More than saves cost of latch, as wind can't jam door to pieces.

Handy. Can be opened from either side. One jerk on the trigger unlatches door, opens it and latches it open, and one pull on wire closes door and latches it shut.

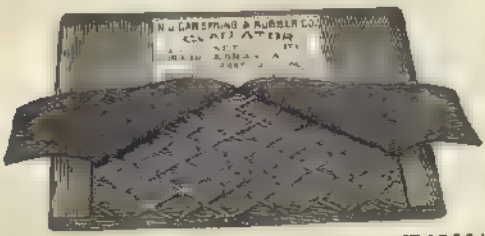
Self-acting. Never fails to catch when door is thrown open or shut. Sagging of door does not prevent latching. Will not freeze fast.

Cheap, when use is considered. Will last a life-time. Put up in one-dozen boxes.

Price, per dozen - - $3.00.

THE BUCKEYE MFG. CO., Anderson, Ind.

HIGH GRADE RUBBER GOODS



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Belting, Packing, Tubing, Springs, Valves, Gaskets, Mats and Matting, Rubber Lined Linen and Cotton Hose.

Our "**Gladiator**" Seamless Quilt Stitched Belt, is double stitched, the lines of stitching being put in obliquely and crossing each other, in other words, "It is quilted." **The strongest, most durable, and only satisfactory sewed Belt on the market.** Send for sample and prices

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L. G. ENGLISH, 507 Ashland Block, Chicago, Ill. BRANCH OFFICE, 10 BARCLAY ST N Y MAIN OFFICE AND WORKS JERSEY CITY, N. J.

A GOOD AD

A STORE or a dwelling painted with **Lucas' Paint.** It preserves. It beautifies. It will catch the eye. Our sample cards are practical. They **show** harmonious combinations of beautiful and durable colors. We put your name and address on them. They advertise your general business. We guarantee the paint. Write us for cards and Dealer's Discount. . . .

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New York Office, 2 1-2 MURRAY ST. Works, 1 1-4 hours' ride from New York City on N. Y., N. H. & H. R. R. R.
BRIDGEPORT, CONN., U. S. A.

ESTABLISHED 1877

The Wilmot & Hobbs Mfg. Co.

INCORPORATED 1884

MANUFACTURERS OF
BEST SOFT, EXTRA SOFT & SPRING, BESSEMER
& OPEN HEARTH, HOT ROLLED, ANNEALED & PICKLED, ALSO
BRIGHT COLD ROLLED "SWEDOH" STEEL.

SPECIAL BUTTED SEAM TUBES TO ORDER

LOCK SEAM BRASS TUBES

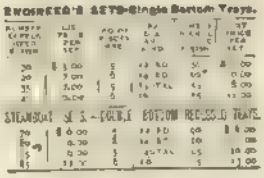
PLATED & JAPANNED

Seamless "SWEDOH" Steel
Oilers, Lamps, Engineers' and Steamboat Sets, &c.

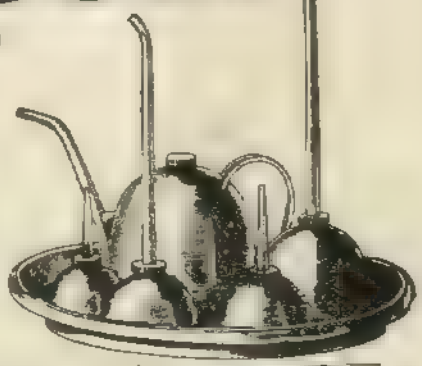
This illustration only a few of our Leading Sizes. These sizes are marked on Price-List "A" All orders filled promptly from stock

"COPPERIZED" OILERS

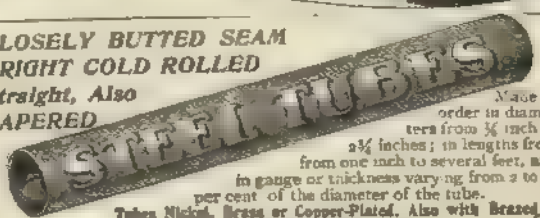
Registered Trade Marks



Large Stock—
Best of Facilities



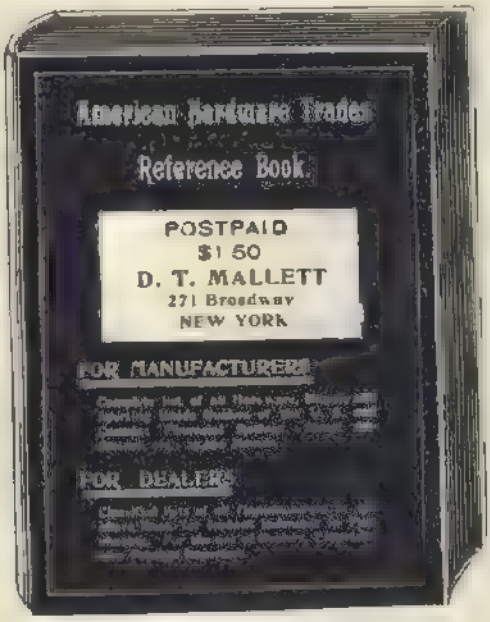
CLOSELY BUTTED SEAM
BRIGHT COLD ROLLED
Straight, Also
TAPERED



Made to order in diameters from ⅛ inch to 2¼ inches; in lengths from from one inch to several feet, and in gauge or thickness varying from 2 to 15 per cent of the diameter of the tube.
Tubes Nickel, Brass or Copper-Plated. Also with Brazed or Soldered Seams, to Order.

Special attention is called to our "everlasting" new and improved **Plain Smooth Surface, Clock Spring Steel Bottom** Squirt Can Oilers, and to the fact that we are now furnishing them with a reinforced steel neck and a steel collar or cap on the spout (Pat. May 28, 1895), in which the screw threads are cut. **These Threads will last much longer than if cut on Brass,** which metal is so soft that the threads soon wear out or are easily damaged by getting "crossed."

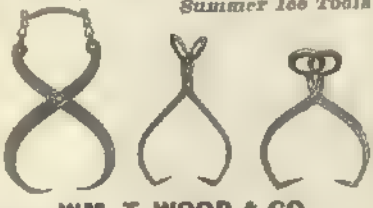
DEALERS need it to find addresses of Manufacturers



MAKERS need it to find addresses and ratings of Dealers

ICE TONGS

Axes, Chisels, Hand-Saws Scales, and all varieties of Summer Ice Tools



WM. T. WOOD & CO.
Manufacturers of Finest Quality Ice Tools
180 Mass Ave.
Send for 1897 Summer Circular. Arlington, Mass

Mixed ready for use. Glossy black finish. One gallon will cover 500 square feet of surface. One coat will last five years. Write for prices. The Kansas City Metx Roofing & Tar Co 416 Delaware St., Kansas City, Mo.

Are You Thinking

Of using the *Billboards* for advertising purposes? We can give you valuable pointers on the subject that will assist in obtaining profitable results.

Information costs but the trouble of inquiry

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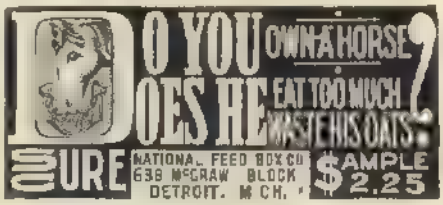


BUHL "CHICAGO" MILK CAN

THE REAL THING

WARNING!

We caution the trade against a poor, light can, sold as the "**Chicago**" pattern, and inferior factory stock sold as the "**Buhl**" by a Chicago jobber. Every piece of genuine **Buhl** stock is stamped with this Trade Mark. Allow no dishonest substitution.

If in doubt, write the Makers

DIXON'S CYCLE CHAIN GRAPHITES

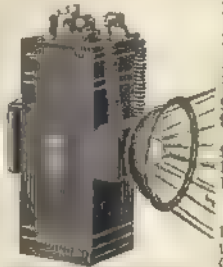
No. 678 POWDERED GRAPHITE **No. 679** LARGE STICK **No. 691** SMALL STICK **No. 692** PASTE IN COLLAPSIBLE TUBE

Nothing in the market equals these for quality, for no other manufacturer can produce graphite equal to Dixon's, and pure flake graphite is superior in every way to any other lubricant for preventing rust and for reducing friction. Circulars and prices on application.

JOSEPH DIXON CRUCIBLE CO., - - Jersey City, N. J.

We Undersell All

It gives a Light that's White and Bright,
And Two cents is the cost per night



Bicycle Electric Lights	$4.00
Necktie Electric Lights	1 50
Edison Elec. Motors,	1 00
Battery Pan Motors,	5 00
$8 Medical Batteries	3 95
$100 Bicycles, best made	39 00
$1.25 Bicycle Bells	50
Electric Bells finest,	30
Dry Batteries, best,	25

Discount to Dealers

Our Bicycle Electric Light is the best thing that ever happened

Catalogue free

OHIO ELECTRIC WORKS, Cleveland, Ohio

THE AUTOMATIC REEL

The Little Finger Does it.

It will wind up the line a hundred times as fast as any other reel in the world. It will wind up the line slowly. No backlash ever gets back line with it. It will save more fish than any other reel. *Simply turn the crank with the little finger that holds the rod.* SEND FOR CATALOGUE

YAWMAN & ERBE,
Rochester, N. Y.
Please mention this paper.

EAGLE and LEADER

Bicycle Pumps

MADE WELL!
SELLS WELL!
WEARS WELL!

Fills Tires Quicker Than Any Other Pump

Connecting Nipples

All accurately threaded and will fit all the well known tires.

Write for Trade Prices.
Special Inducements to the Jobbing Trade

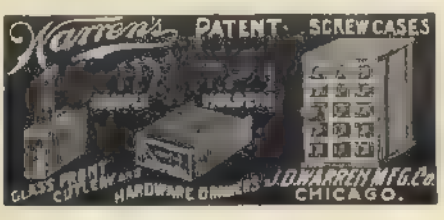
HENRY HAAS & SON, 551-553 West 35th St. NEW YORK

The demand for the Sheffield Steel Folding Grindstone Frame with Double Treadles, has become so universal that no Jobber's stock is complete without it and no dealer can afford to be without it, as its excellence is so apparent that everybody is taken with it at once, and no one after using it will ever buy any other at any price.

If you don't already keep them in stock, order at least a sample of any Grinding Jobber, or of the Manufacturers

Patented in U.S., Canada, Germany and England.

Schofield & Co.
FREEPORT, ILL., U.S.A.



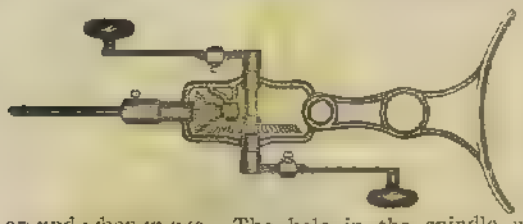
MOLDERS' TOOLS

Our Calfskin Bellows

- - Are Long-Winded and Outlast All Others

ANGELL & DOBSON, Canastota, N. Y.

DOUBLE CRANK BREAST DRILL, No. 14.



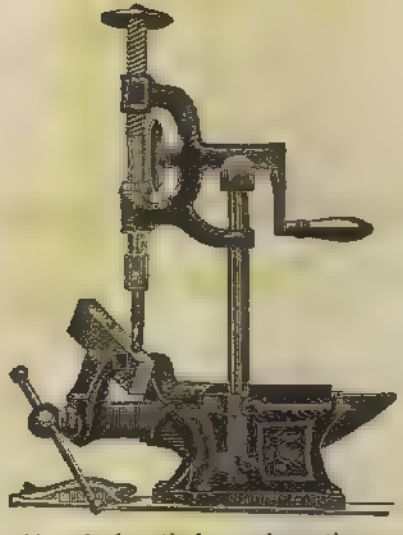
To meet the demand for a more powerful and more durable breast drill, we now offer this double crank machine No. 14. It has very heavy cut gears, speeded about two to one, and double cranks, which are adjustabe to any length and by which the power and speed may be regulated as desired.

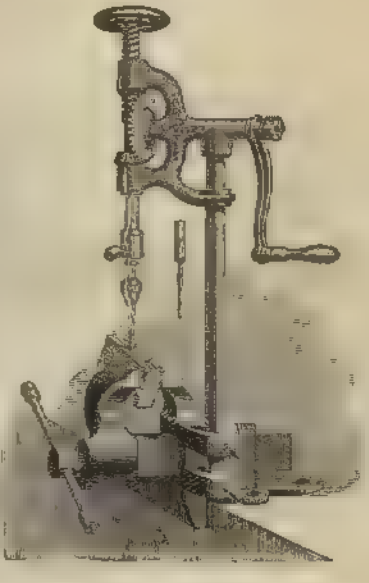
The Breast Plate is twelve inches long, and curved to fit the shape of the body, thus preventing it from swinging around when in use. The hole in the spindle which receives the drill is one-half inch in diameter. We sell Twist Drills of all sizes with one half inch shank to fit this machine. We can furnish a chuck to fit it which will hold all round and square drills below 7-16 inch. This is a tool which will stand very hard usage.

Double Crank Breast Drill, No. 14 . . . . . Each, $5.00
Adjustable Chuck to fit same (specify if wanted) . . . . . " 1.00

ANVIL, VISE AND DRILL.

Inserted Steel Jaw Vise.



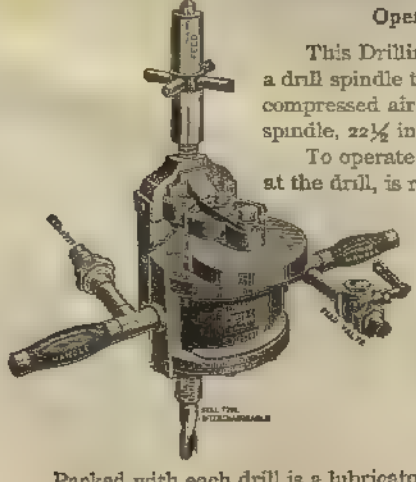


This anvil has a steel face, 4 x 8 inches. Vise Jaws 3½ inches wide, and steel faced. Steel Drill Press with adjustable chuck to hold ½ inch drills and all smaller sizes. We have for sale Twist Drills, from ¼ to ½ inches, with uniform ½ inch shanks, as seen in the cut opposite, which just fit into the spindle when the chuck is removed; one of these drills, for a sample, goes with each machine. The article to be drilled can be held firmly in the vise, so as to be drilled at an angle. A bolt of iron or soft steel can be drilled accurately down through the centre, which cannot be done by hand with any other tool. When the drill is sold without the anvil, it is attached to an offset vise, as shown in cut. This vise has steel faced jaws 3½ inches wide, which entirely overhang the screw and the box which covers it. For many purposes this is the most convenient vise in use.

Weight of Anvil, Vise and Drill, 80 pounds . . . . . Price $18.00
" " " and Vise . . . . . 60 " . . . . . " 10.00
" " Drill Press . . . . . 20 " . . . . . " 8.00
" " Offset Vise and Drill, 61 " . . . . . " 15.00
" " " " alone, ... 41 " . . . . . " 7.00

THE IMPROVED MOFFET PORTABLE DRILL.

Operated by Steam or Compressed Air.



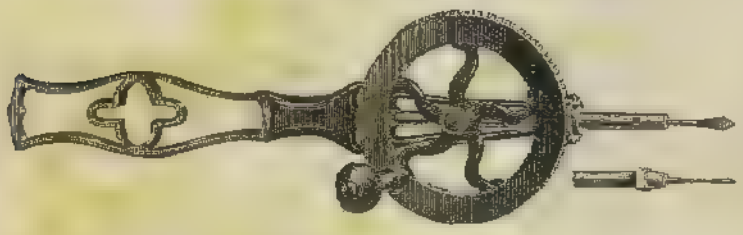
This Drilling Machine consists of a small rotary engine, connected by steel gears to a drill spindle the end of which is a taper socket. It is operated with either steam or compressed air. Weight complete 48 pounds length from top of feed nut to end of drill spindle, 22½ inches, from handle end to handle end 23½ inches, without handles 8 inches.

To operate the drill either compressed air or steam, at from 42 to 80 pound pressure at the drill, is required. The feed pipe at the drill is ⅜ inch, the exhaust is ¾ inch. connection with supply is made by means of a ½ inch steam hose and the length of hose determines the radius of action of the drill. If steam is used the exhaust is carried by ordinary hose to any convenient point; if air is used it exhausts at the drill.

Drilling capacity is from ⅛ inch to 2¼ inches. The machine is fitted with No. 4 Morse taper socket, taking 1¼ to 2 inch drills. For larger or smaller drills steel sockets or sleeves may be used. This drill may be clamped on with brace or knee, the same as a ratchet, or placed in position by any secure, rigid means; it can be operated vertically, horizontally or in any way that circumstances require.

Packed with each drill is a lubricator, 6 feet of steam hose and 10 feet of exhaust hose.
Price, each $175 00

SMALL HAND DRILLS, No. 0.



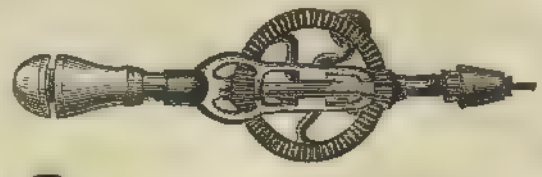
With Six Tempered Drills, $\frac{1}{32}$ to $\frac{6}{16}$ inch, in a covered case which forms part of the handle.

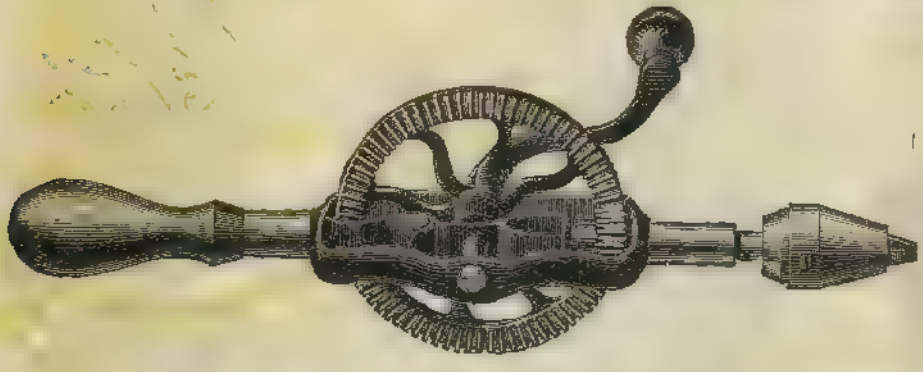
With Adjustable Chuck....$1.00

HAND DRILLS, No. 1.

The Chuck holds Drills with round shanks to ⅛ inch. Six Drill Points with each Drill Stock.

No. 1, single gear, hollow handle, nickel-plated, $1.25





HAND DRILLS No. 2.

The Chuck holds Drills with round shanks to ¼ inch. With hollow handle, containing 6 Drill Points. It has cut gears and is heavily nickel-plated.

Each... $2.50

HAND DRILLS, No. 4.

This Drill Stock is eight inches in length and weighs eight ounces. It is made of iron with rosewood handle, and brass chuck for holding the Drill points. This chuck is made on a new plan, and it centers and holds the Drill perfectly. With each Drill stock we send a box containing six superior Drill points of various sizes.

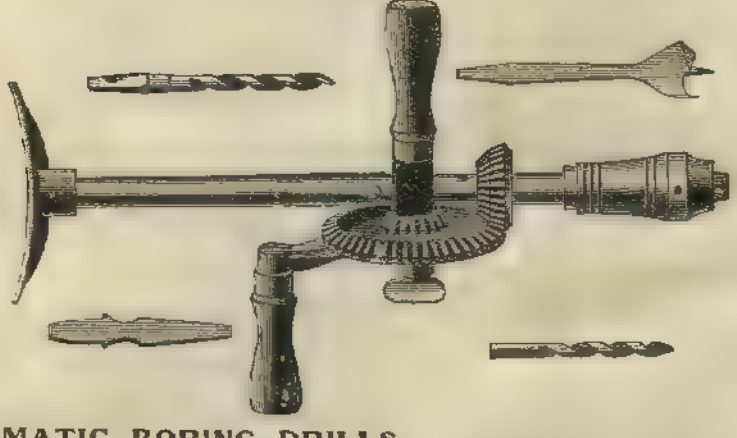
Stock and Drills.....each, 50c.

BREAST DRILLS, No. 10.

The Chuck will hold Drills with round, square, or flat shanks.

The speeds can be changed by shifting the gears.

Each.....$3.00

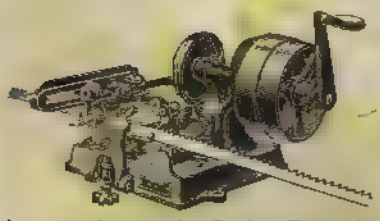


AUTOMATIC BORING DRILLS.

This instrument is designed for boring wood for various purposes, such as for setting brads, finishing-nails, screws, etc. Eight bits, (or drills, sizes indicated by dots and numerals as represented in cut) accompany each tool. It can be used in many places where the bit-brace, gimlet, or brad-awl cannot, and is superior to either for the purposes mentioned. When Nos. 1, 2 and 3 are sharpened for drilling metals, they will work with satisfaction in brass and compositions.

With Drills, ...each, $2.00

BAND SAW FILING MACHINE.



This machine can be operated by hand or power. It files saws from one-eighth inch to two inches wide. Teeth as fine as *one-eighth inch from point to point* or as coarse as *one inch from point to point*. It files 125 teeth per minute.

The pawl moving the teeth forward brings every tooth to the desired place, *even when the teeth are not evenly spaced* from point to point.

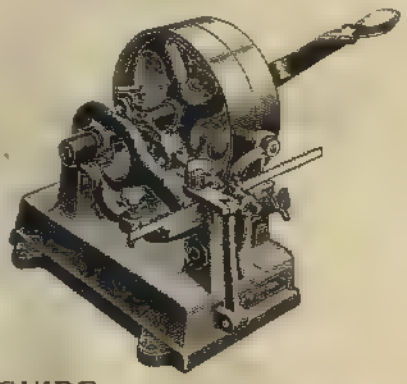
The file does not rise up straight; it rises sidewise and upward at the same time, as shown by the diagram. Thus the teeth can be filed "under the hook" or "square across," as desired.

Common Files of different sizes are generally used; however, for the best results use the Grobet Taper Saw Files.

Loose and tight Pulleys are 7 inches diameter for 1¼ in. belt, and should make about 125 turns per minute.

Price, each..... .....$40.00.

BAND SAW SETTING MACHINE.



Capacity same as Band Saw Filing Machine.

The saw is held firmly in a vise while it is being set; the vise opens slightly when the saw is moved forward.

Every tooth is brought to its proper place, even when the teeth are unevenly spaced.

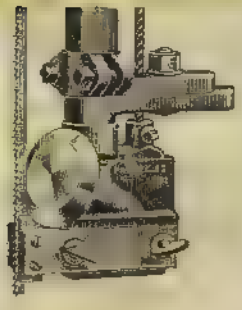
Every turn of the wheel sets two teeth. This machine does not kink the saw.

It can be worked by hand or power.

Loose and tight pulleys are 9 inches diameter for 1¼ inch belt, and should make about 100 turns per minute.

Price, each.....$40.00.

NON-FRICTION BAND SAW GUIDE.



The saw bears against the beveled edge of an anti-friction roller of hardened steel. This roller has a long, inclined bearing, closed at the bottom to prevent the escape of oil.

The side guides are of hardened steel, wide and long, to insure durability and to give a good bearing on the saw to prevent twisting and "running."

The roller can be set forward or back to accommodate the position of the saw on the wheel, and the side-guides can be independently set to cover the saw close up to the teeth. The wider their bearing, the less the friction and the less the saw will "run."

The side-guides can be accurately set to different thicknesses of saws and they can be angled to compensate for any wear that may occur at their front edges.

The entire guide can be attached to any machine in a few minutes without the aid of any tools except a monkey-wrench. When once in position it can be quickly adjusted to any width or thickness of saw, without the aid of wrenches or screw-drivers.

No. 1.—For Saws up to 1 in. wide .....$10.00 net.

No. 2.—For Saws up to 2 in. wide ..... 15.00 net.

CIRCULAR SAW FILING MACHINE.

This machine is suitable for saws from seven inches to twenty-four inches diameter, saw holes from three-quarter inch to one and one-half inch diameter.

Saws can be placed in position and removed in less than one minute.

While the file moves forward the vise holds the saw firmly, and when the file moves back the vise opens slightly allowing the following tooth to be moved onward.

The movement of the file is the same as in the Band Saw Filing Machine—side-wise and upward at the same time.

The file can be accurately adjusted to suit any shape of tooth.

The machine can be run by hand or power.

Loose and tight pulleys are 10 inches diameter for 2 inch belt, and should make about 80 turns per minute.

Price.....$45.00.

CIRCULAR SAW SETTING MACHINE.

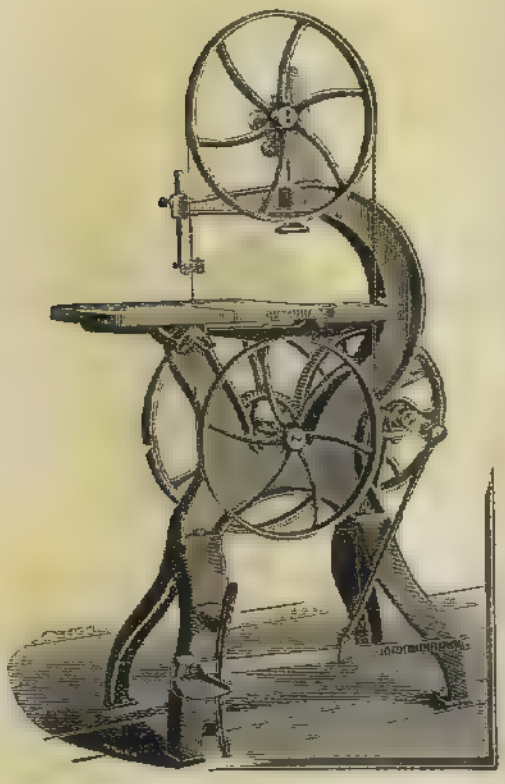
This machine is suitable for saws from six inches to twenty-six inches in diameter; saw-holes from three-quarter inch to one and one-half inch in diameter. Teeth may vary from one-eighth inch to one and one-half inch from point to point.

Saws can be placed in position or removed in less than a minute, and accurately adjusted so as to set any style of tooth properly, even when the teeth are not uniformly spaced from point to point.

Saw teeth set by this machine are bent—not hammered nor swedged.

The machine is operated by hand power only.

Price.....$40.00



20-in. Hand and Foot Power Band Saw.

Price $65.00

This includes two saw-blades, $\frac{1}{16}$ and $\frac{1}{16}$ set and filed or any two saws up to $\frac{3}{8}$ inch, one crank handle, and one wrench; net weight of machine, 350 lbs.

Extra Shaft and tight and loose pulleys for power..... $6.00

24-in. Power Band Saw.

Same pattern as above with 24-inch wheels and counter-shaft for power (no foot power).

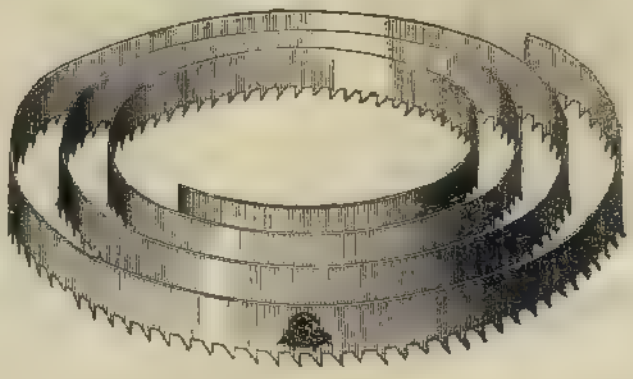
Counter-shaft has two pulleys 9-inch and 10-inch diameter and should run at a speed of 300.

Price, with saws as above..... .....$65.00
" without the countershaft..... ..... 55.00

French Band Saws.

Best Quality.

Small band saws can be had in 500 feet lengths. We make a specialty of wide band saws, 2 to 10 inches wide, any gauge or length. Also, band saws for cutting metals. Prices given on application.

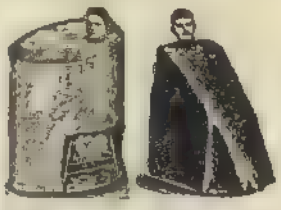


Width, inches.....	$\frac{1}{16}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	1¼	1½
18 feet long, each.....$	0.67	.88	.99	1.30	1.57	1.80	2.11	2.52	2.93	3.69
20 " " "	.75	.98	1.10	1.45	1.75	2.00	2.35	2.80	3.25	4.10
22 " " "	.82	1.08	1.21	1.60	1.93	2.20	2.58	3.08	3.57	4.50
24 " " "	.90	1.18	1.32	1.74	2.10	2.40	2.82	3.36	3.90	4.92

Filing Band Saws 4c. foot subject to same discount as saws.
Brazing " " up to ⅜-inch.....$0 30 net
" " " 1-inch to 1¼-inch..... ..... .35 "
" " " 1½-inch..... ..... 45 "

Use Grobet Swiss Files.

The Betz Vapor and Hot Air Baths.



OVER

15,000

SOLD TO

PHYSICIANS.

"Many cases cannot be successfully treated without them."

SEND IT BACK Money Refunded

If not 100 per cent ahead of any method ever used by you for cure of Rheumatism, Gout, Kidney Skin or Nervous Troubles

When used in connection with our formulas for Rheumatism and Syphilis it has never failed.

Almost Give You One for Test on Your Worst Chronic.

The Betz (see right of cut) gives results equal to any $500.00 Cabinet. Regular price $5.00. Complete outfit to Physicians for $2.50 (including formula

The Betz Automatic [illegible] the only circular cabinet that [illegible] the body [illegible] the sick for one chance of [illegible] Applied by [illegible] fastened [illegible] the back of the chair. The [illegible] raised and lowered [illegible] Regular price $5.00. Complete outfit to Physicians for $2.50 [illegible]

The Betz Arm and Leg Hot Air Bath [illegible] The Marvel of the Nineteenth Century for the [illegible] Acute Joints, Numbness, Valvular Vein, Sciatic Rheumatism, Articular Rheumatism, Inflammatory Paralysis, Muscular Atrophy, Periostitis, Gout, Nephritis, Effusion About the Hip Joint, Dropsy, Kidney Trouble, Swollen Joints, etc

Thoroughly Scientific, because Dry Hot Air graduated to 400 degrees is directed to the affected parts, which enables the patient to stand many degrees higher temperature than any other method. Thus giving heat penetration to the deepest tissues

It being recognized that in cases of inflammation about the joints the action of heat is to dry the outer tissues and draw the fluids off into the circulation by absorption.

(Any method that consists in applying the outer surface with hot applications is totally [illegible] and [illegible]

The apparatus is manufactured solely by us. All joints practical. A model of mechanism and beauty. All exposed parts copper with nickel plated trimmings. Fitted with Rest Regulating Dampers, Floor Center Attachments, Heat Generator and Distributor and attachments for treating Right or Left Leg, Arm, Hip, Shoulder and Kidneys

We have yet to learn of a single instance where the bath has not far exceeded the expectation of the physician

Regular price, - - - - $25
Sent complete to Physicians and Hospitals, 20

Over one thousand testimonials to prove physicians are doubling their practice by using Hot Springs treatment with our Vapor Baths TRY ONE

Send for Special Circulars of twenty-five necessities you use daily

COOK COUNTY HOSPITAL,

Chicago, Dec. 1 [illegible]

FRANK S. BETZ, KELLEY & CO.
269 Dearborn St. Chicago, Ill.

GENTLEMEN:—At my request the "Betz Baths" were ordered [illegible] for the Cook County Hospital, and they have given entire satisfaction.

I have no hesitancy in recommending these baths to our [illegible]

Yours truly,
T. A. DAVIS, M. D.
Pres. Medical Board C. C. Hospital

FRANK S. BETZ, KELLEY & CO.,

269 Dearborn Street,

CHICAGO, ILLINOIS.

Largest Manufacturers all kinds Vapor and Hot Air Baths in U. S.

Please mention THE ALKALOIDAL CLINIC when writing.

THERAPEUTIC AIDS IN ABSCESS ACNE ANTHRAX BALANITIS BED SORES BOILS BUBO, BURNS, CANCRUM (ORIS) CANCER CHANCRE ERYSIPELAS.

ANTISEPTIC PREPARATIONS

CAMPHO-PHÉNIQUE, CAMPHO-PHÉNIQUE POWDER, CAMPHO-PHÉNIQUE GAUZE.

THERAPEUTIC AIDS IN FISTULAS FURUNCLE HÆMORRHOIDS NEURALGIA NECROSIS PRURITUS PHAGADAENA RING WORM WOUNDS, SPRAINS ULCERS, SCALDS AND ALL SURGICAL AND GYNAECOLOGICAL CONDITIONS.

PREPARED BY PHÉNIQUE CHEMICAL CO. ST. LOUIS, MO.

THE HAMMOCK INVALID FOLDING BED

The hammock feature is one of the most valuable of the many good points of this bed, facilitating the change and airing of bedding, giving the patient the relief of being lifted from a heated mattress to a cool and comfortable hammock, securing perfect ventilation of the body and preventing bed-sores. The circular opening in the hammock enables the use of a chamber without inconvenience. In fact this bed is a revelation to the weary invalid, being invaluable in the treatment of all acute and Chronic Diseases Paralysis, Rheumatism, Consumption, Continued Fevers, Heart Disease, Fractures and other severe injuries and surgical operations.

ROLLING CHAIRS, ETC. PHYSICIANS' OFFICE FURNITURE.

Address, HAMMOCK INVALID BED CO., Indianapolis, Indiana.

WM. HALL & CO.

WHOLESALE DEALERS IN

Wisconsin customers promptly supplied with preparations of the ..... Physician's Supplies

ABBOTT ALKALOIDAL CO.

Write for List and Circulars

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Janesville, - Wisconsin

Electro-Therapeutics

POST GRADUATE CORRESPONDENCE COURSE

A knowledge of the nature, effects and methods of application of electricity in diseased conditions is essential to every practitioner of medicine and surgery

My Correspondence Course

Experience of scores of physicians offers this needed instruction in a thorough and highly practical form.

TERMS: $15.00 in advance for the entire course.

WM. H. WALLING, M. D.

1606 Green Street - PHILADELPHIA, PA.

BILLINGS' PATENT HAND VISE.

Patented August 28, 1894.

Cuts represent Vise and Clamp 1-2 size.

This vise is designed for jewelers, tool makers, and machinists' use. All parts are drop-forged of best steel for the purpose. The jaws have a positive opening and closing movement in parallel lines, actuated by a right and left hand screw, moving the jaws simultaneously towards or from each other. A hole is entirely through the handle and the jaws will grasp and hold central, round wire from $\frac{1}{16}$ inch up to and including $\frac{1}{4}$ inch in diameter. The jaws open $\frac{7}{8}$ inch.

Figure 2 represents a clamp for holding the vise when in use, as a bench vise.

Price, Vise without Clamp.....$4.00 each.
Clamps.....$2.00 each.

THE BOSS HAND VISE.

This Vise (except handle,) is all steel, hardened throughout and finely finished with polished jaws.

Width of jaws. 1¼ in.
Jaws open.....¾ in.
Weight.....½ lb
Price.....$0.75.

BICYCLE NIPPLE GRIP, "PERFECT."

The Perfect Nipple Grip is made of drop-forged steel and is case hardened. It is an adjustable grip and will secure a perfectly tight hold to any bicycle nipple; even if nipples are worn on the corners or covered with enamel, in which case a stationary grip cannot possibly do the work.

A coil spring between the jaws opens the latter just to the size of the flat or square nipple shoulder, and a slight turn of the thumb screw secures sure grip to the nipple, never wearing off its corners.

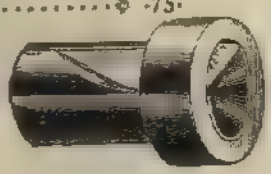
The support hook on the other end hangs right on to the spoke and gives the tool always its perfect position, which secures quick work in truing up wheels.

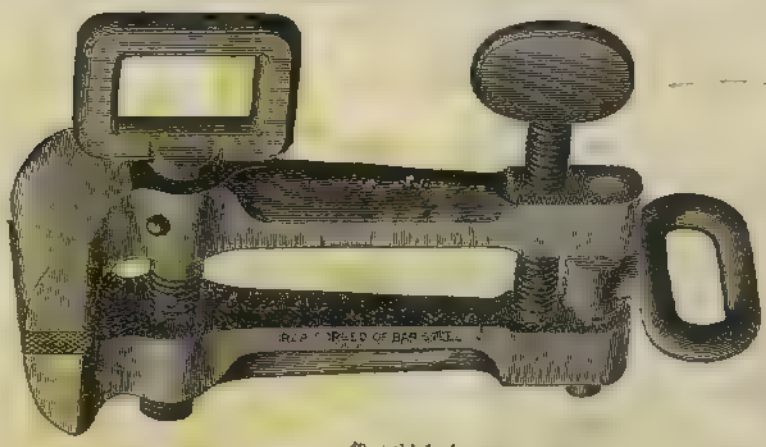
No. 1. Length 3¾ in., Weight 4 oz.
Price each..... $1.00.
No. 2. Length 3 in., Weight 2 oz.
Price each.....$ .75.

WIRE POINTER.

For use in Lathe or Screw Machine for pointing Screws, Wire, &c., makes a point with an angle of about sixty degrees, similar to a lathe center, will point from ⅛ to ⅜ inch diameter.

Price, $1.50 each.





Two-thirds size.

NEW HAND VISES.

With Parallel Jaws.

They are drop forged from solid bar steel, due regard having been given to distributing the metal in such a manner as to make it very strong where all the strength and resistance is required, and not have it too heavy or clumsy. The parts are interchangeable, and they are hardened by a special process, which renders the jaws very tough and hard. The jaws are parallel, which gives them a very strong grip.

	Each
With loop	$2.50
Without loop, for machinists	2.25
Vise strap, best quality	1.00

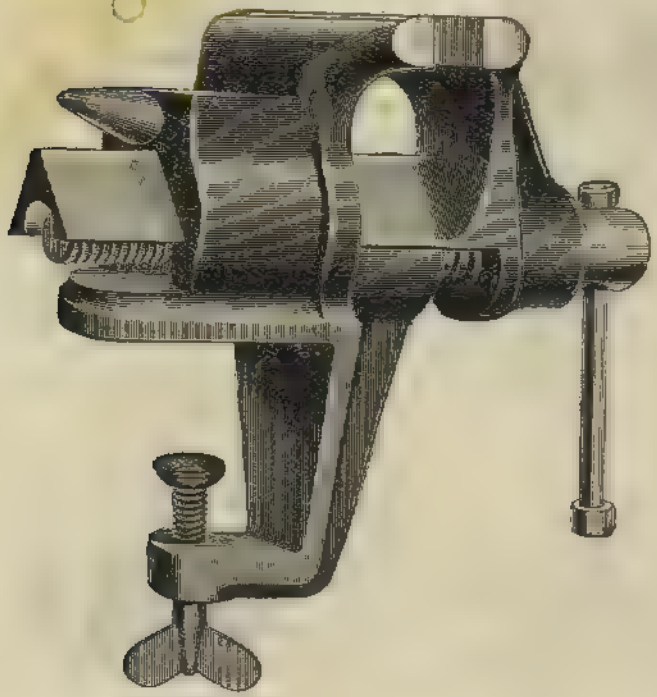
PATENT ADJUSTABLE-FACE VISES.

The section of jaws shows the adjustable faces, which adapt themselves to the form of whatever article they grasp, thereby insuring a firmer grip and causing less strain upon the jaws than in any vise ever before produced. Their superiority consists in the perfect workmanship of the parts, which are made from the best quality of steel procurable, and are interchangeable, thus admitting of duplication at slight cost. For telegraph and telephone purposes, especially these vises are unsurpassed.

Without Loop, 5 inches	per doz.	$25.00
" 6 "	"	34.00
Extra Rings	"	3.00
With Loop, 5 inches	"	28.00
" 6 "	"	37.00
Extra Jaws	"	3.00
Extra Thumb Nuts	"	2.50

CHAMPION VISES.

Covered Screw.



No. 118—Half Size.

These strictly first-class Vises are made for all who need the strongest, most practical and finest made tool of the kind in the market. All parts interchangeable, therefore accuracy of fitting is assured. Quality of screw and lever is guaranteed.

No.		Size in.	Wgt. lbs.	Each.	Per doz.
112		1½	1¼	$0.38	$4.50
113		1¾	1¾	55	6.50
114		2	2½	.75	9.00
115		2¼	2¾	1.00	12.00
116	Steel Jaws	2	2½	1.25	15.00
117	Steel and Swivel Jaws	2	2½	1.75	21.00
118		2½	3¾	1.50	15.00
119	Steel Jaws	2½	3¾	2.00	24.00
120	Steel and Swivel Jaws	2½	3¾	2.50	30.00
121		3	7½	2.00	24.00
122	Steel Jaws	3	7½	2.50	30.00
123	Steel and Swivel Jaws	3	7½	3.00	36.00
125	Steel Jaws	2	2¾	1.25	15.00
126	Steel and Swivel Jaws	2	2¾	1.75	21.00
127	Steel Jaws	2½	4	2.00	24.00
128	Steel and Swivel Jaws	2½	4	2.50	30.00
129	Steel Jaws	3	8	3.00	36.00
130	Steel and Swivel Jaws	3	8	3.50	42.00

Sample Stand.....each, $1.62

BOURDON GAUGES.

Single Spring.

Fig. 59.

Fig. 8

Fig. 10.

These Gauges must be connected by a Syphon.

Improved Single Spring Bourdon Pressure or Vacuum Gauges.

Springs of Solid Drawn or Brazed Tube.

INCLUDING COCK.

	SIZE.	Iron Case Brass Ring.	Iron Case, N. P. Ring.	Brass Case.	N. P. Case	Brass Deep Case, O. G. or Oct. Ring	N. P. Deep Case, O. G. or Oct. Ring.
Fig. 59.	12 inch Dial.....	$50.00	$51.50	$75.00	$79.00	$80.00	$84.00
"	10 "	32.00	33.00	40.00	43.00	44.00	47.00
"	8½ "	22 00	22 75	30.00	32.50	33.50	36.00
"	6¾ "	16.00	16.60	20.00	22.00	23.00	25.00
"	6 "	13.00	13.50	16.00	17.50		
Fig. 8.	5½ "	10.00	10 25	12.00	13 25		
"	5 "	8.00	8 20	11.00	12.00		
"	4½ "	8 00	8 20	10.00	11.00		
"	3½ "	7.00	7 18	9 00	9 75		
"	3 "	6 00	6.15	8 00	8 00		
Fig. 10.	2½ "			8.00	8.60		
"	2 "			8.00	8.60		
"	1½ "			10.00	10.60		
"	1 "			12.00	12.60		

Improved Double Spring Bourdon Pressure Gauges.

Springs of Solid Drawn or Brazed Tube.

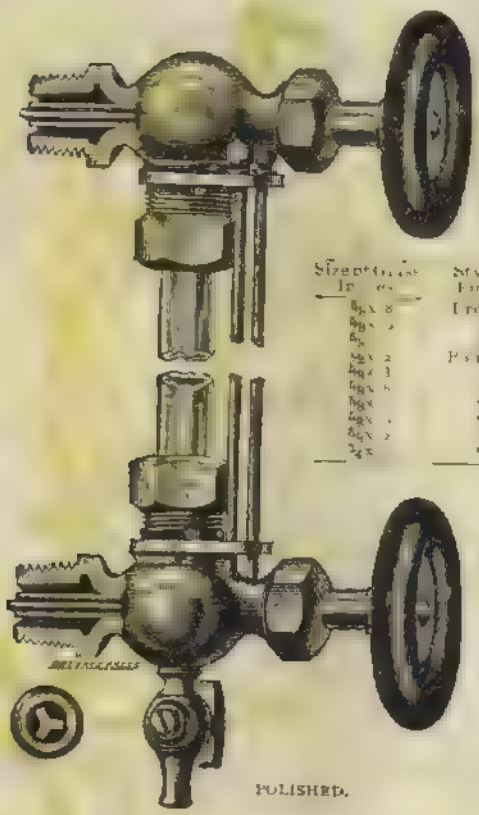
INCLUDING COCK.

SIZE.	Iron Case, Japanned	Iron Case, N. P. Ring	Brass Case.	N. P. Case	Brass Deep Case, O. G. or Oct. Ring	N. P. Deep Case, O. G. or Oct. Ring.
12 inch Dia	$55.00	$57 50	$80.00	$84.00	$85.00	$89 00
10 "	37 00	38 00	45.00	48.00	49.00	52 00
8½ "	25.00	25 75	34.00	36.50	37.50	40 00
6¾ "	18 00	18 60	22.00	24.00	25.00	27 00
6 "	15 00	15 50	18.00	19.50		
5½ "	12.00	12 25	14.00	15.25		
5 "	11 00	11.20	13.00	14.00		
4½ "	10.00	10 20	12.00	13.00		

WATER GAUGES.

ROUND BODY WITH TWO GUARDS.

Size of Glass, inch.	Style of Finish	Wheel.	Shank, Inches.	Price, Each.
⅜x 8	Bronzed	Iron	½	$4 75
⅜x 9	"	"	"	"
⅜x10	"	"	"	"
⅜x12	Polished	"	"	"
⅜x13	"	"	"	"
½x 5	"	Wood	½	4
½x 6	"	Iron	½	3
½x 8	"	Wood	½	5
½x10	"	"	"	6 25
½x12	"	"	"	7 50



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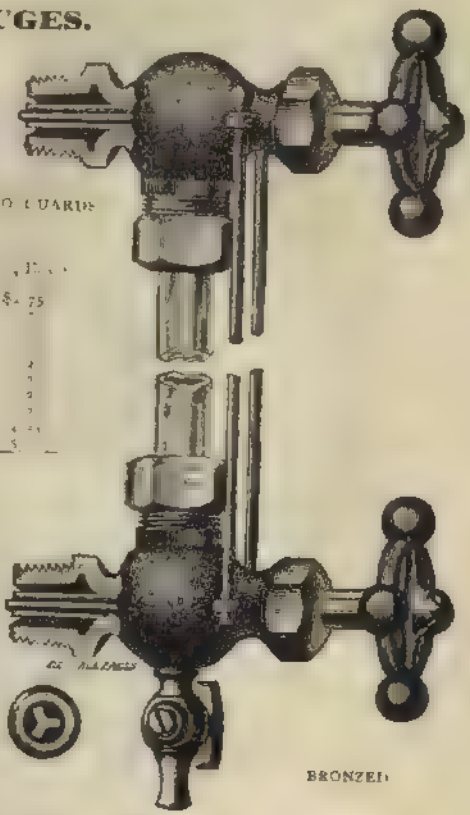
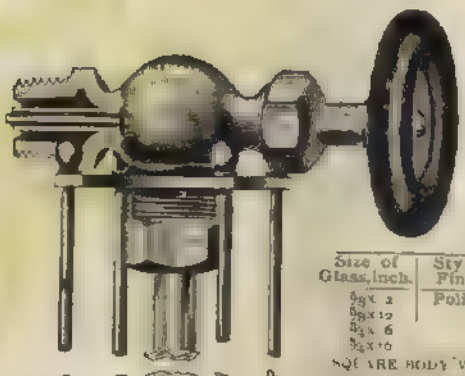
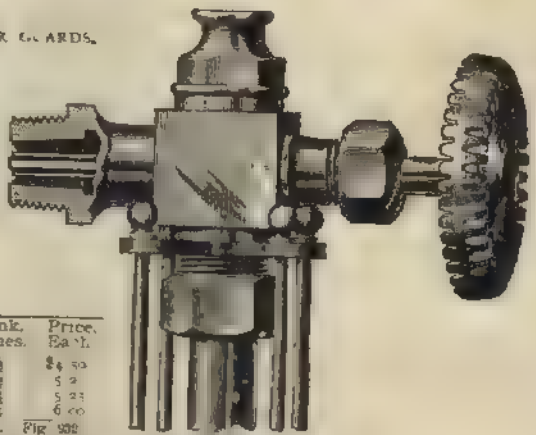


BRONZED.

ROUND BODY WITH FOUR GUARDS.

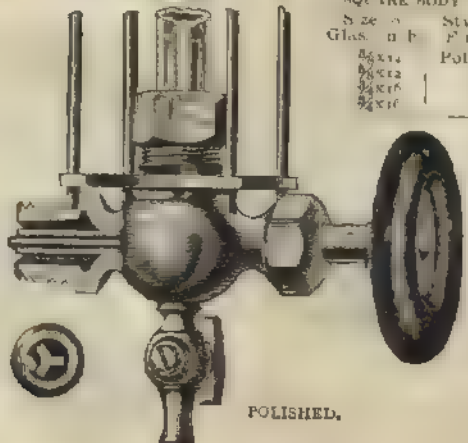
Size of Glass, inch.	Style of Finish	Wheel.	Shank, Inches.	Price, Each.
⅜x 8	Polished	Iron	½	$4 50
⅜x12	"	Wood	½	5 25
½x 6	"	Iron	½	5 25
½x10	"	Wood	½	6 00





SQUARE BODY WITH FOUR GUARDS. Fig. 932.

Size of Glass, inch.	Style of Finish	Wheel.	Shank, Inches.	Price, Each.
⅜x14	Polished	Iron	½	$5 25
½x12	"	Wood	½	6 00
½x16	"	"	½	10 00
½x16	"	Brass	½	12 50



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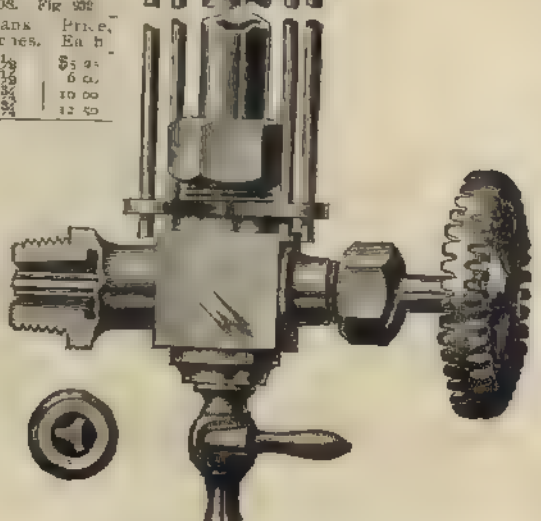

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3. Increase of temperature is third in importance, but when associated with one or more of the previous symptoms, and more especially with increase of pulse rate, it makes immediate operation a foregone conclusion.

4. The gradual subsidence of the three cardinal symptoms—pulse rate, pain, and temperature—is a legitimate reason for postponing immediate operative interference

5. In cases of abscess it is generally safer, while watching for urgent indications, to wait until adhesions have formed a sufficient protective wall.

6 In cases of recovery after mild attacks without operation we are never sure of recurrence until the latter takes place, when the operation can be done soon enough, and all other circumstances being equal, preferably in the interval of a succeeding attack and when the tissues are not in an inflamed condition.—*Stratt. Med. Rec.*

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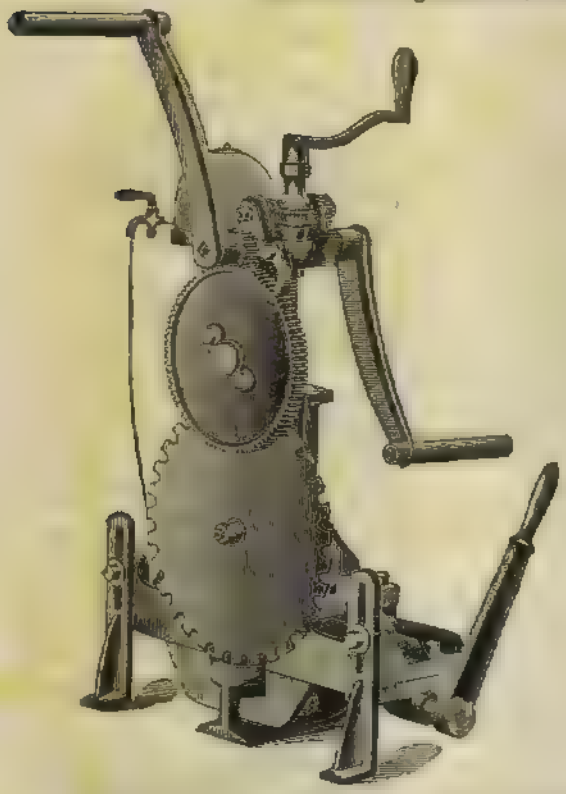
Portable Sawing Machine, 16-inch Blade, with Automatic Feed.



This machine is designed especially for steam and street railroads; it will cut rails, beams, channels, etc., up to seven inches in height, and including 45°. It is generally operated by two men, but can be by one, as the great decrease of power required is explained by the fact that the power is applied directly to the periphery of the saw blade, which enables the operator to get the greatest amount of power possible with the least exertion. With this machine continuous cutting can be done with little effort, owing to its ease of action. Steam rail can be cut in from six to twelve minutes. The saw blade being hollow ground and acting as a rotary planing cutter, it leaves the rail perfectly smooth and true. An accuracy of $\frac{1}{100}$ of an inch can be obtained. It is an indispensable tool to all track men. It is especially valuable in cutting off rail ends. It is of great value in making crossings and switch lay-outs on account of its ability to cut angles. It is well and strongly built, all feed gears, etc., being cut from solid steel; is equipped with an automatic feed and quick release, and can be attached to a rail in thirty seconds. It is furnished complete with two saw blades securely boxed and ready for work. Weight of machine, 260 lbs.; boxed, 300.

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No. 5A, For straight and angle work up to 45°..... 150.00

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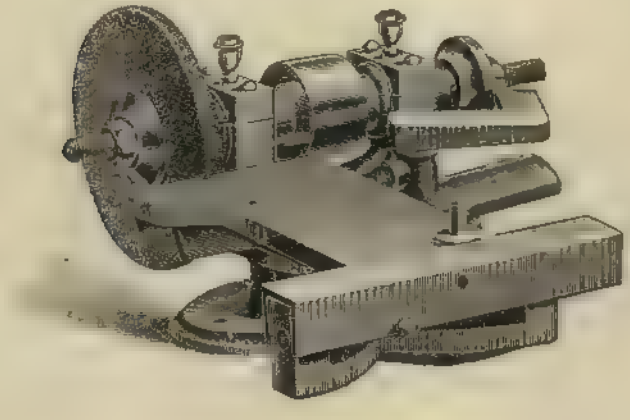
A Bryant Saw Blade will withstand a wear of one inch on its diameter before it is necessary for them to be regummed. This assures from three to eight months' use on continuous work on rails, beams, forgings, etc. It can then be regummed at a very low cost and used in connection with a larger sprocket, which are always kept in stock.



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This grinder is expressly designed for sharpening the Bryant Saw Blades, and is also provided with a double-ended arbor on which can be placed an additional emery wheel for tool grinding, making it a very desirable tool for any shop. It is furnished complete, with special table for saws, and emery wheel.

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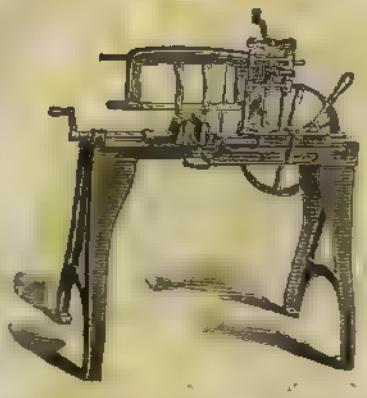
THE "Q AND C" SHOP SAW.



It will cut all kinds and sizes of metal up to 5 inches in diameter. It is an improvement over any power Hack Saw, in the fact that it has a positive feed, which is entirely automatic, and can be instantly changed in speed to accommodate hard or soft metal, large or small. It is a well known fact that all other Power Hack Saws depend entirely upon gravity to feed the saw through the work, and as the weight of the saw frame cannot be increased, the cutting speed rapidly decreases as the size of work increases. The "Q and C" saw having an automatic screw feed, adjustable to all kinds of work, the same cutting speed is maintained throughout. Our saw frame having a perfectly horizontal motion, does not drag back on the work, actually saving 50 per cent. of the wear.

The "Q and C" special Shop Saw Blade being twice the width of ordinary hack saw blades, and much heavier, will actually outlast from one to six dozen on regular work. A handle can be attached to pulley, and the saw operated by hand.

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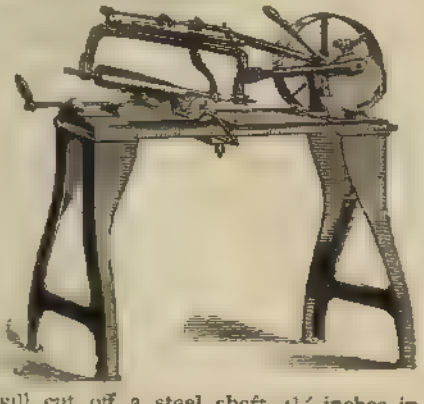
Extra Saw Blades.....per doz., 1.50

THE STAR POWER HACK SAW.



This machine is designed for cutting iron and steel. It will cut any size up to 4½ inches in diameter, and any shape that can be held in the vise. It also cuts piping very nicely. By its use a good percentage of metal is saved, as the pieces cut are left smooth, and no labor or metal is lost in squaring up, as is the case after heating and cutting with the "Hack." This saving in Hobson's, Jessop's or other high cost steels, is quite an item in stock, to say nothing of the labor. For cutting up Die Blocks, and a thousand and one other things, the advantage of using this saw will be manifest.

The Blades used for cutting are Hack Saws, 10, 11 and 12 inches in length. After machine is started no attention is required until the piece is cut off. The expense of blades is small, as one blade will cut off a steel shaft 4½ inches in diameter several times. The machine should be run from forty to forty-five revolutions per minute.

Price of Star Power Saw.....$25.00

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Price of Rest.....$1.50

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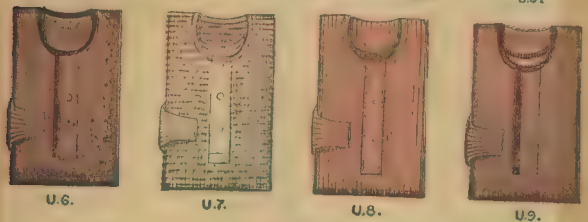

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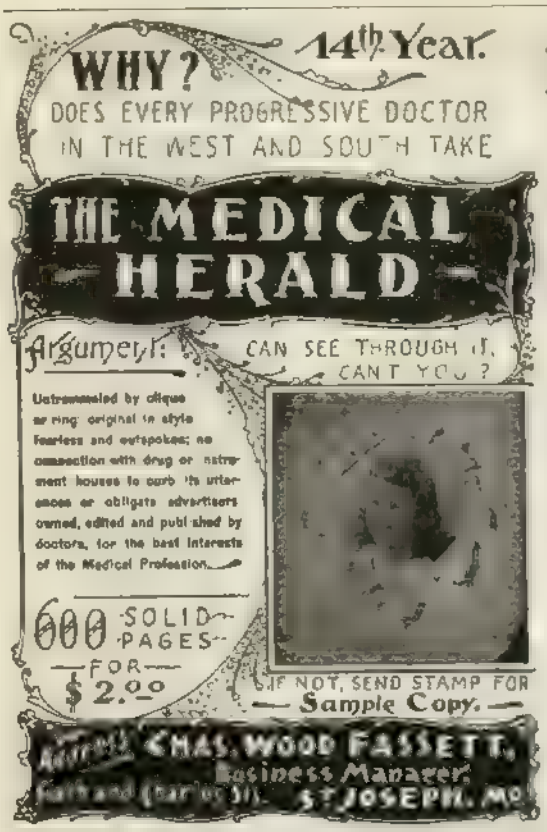
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Take a cup of beef free from fat, sear it over an alcohol lamp, put it in a lemon-squeezer and squeeze out the juice. This contains five to ten per cent of albuminoids. Add to this a little new milk and pepsin. Curdle the milk by adding a little hydrochloric acid, beat up some eggs and add twenty or thirty grains of pure crystal pepsin. This makes an admirable invalid to[illegible]. I frequently rub the yolk of an egg with half its bulk of glycerin, and give twenty to sixty drops every half to one hour. It is a strong food, is quickly absorbed, and may be mixed with milk or with beef essence. — *Adelphus: Ga. Eclect. Jour.*

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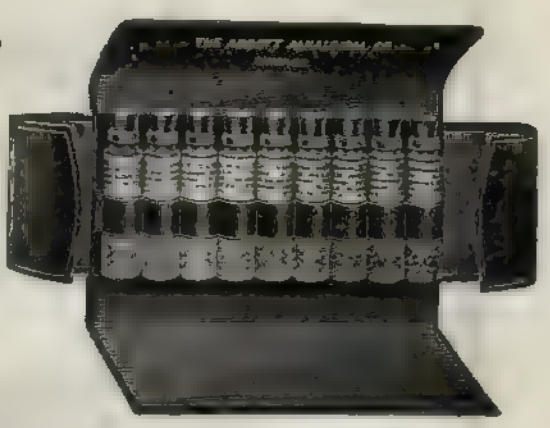

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Just send $1 00 subscription price of the CLINIC for one year, and we will send you this substantial pocket case, filled with your selection from the following list of standard **Alkaloidal Granules and Tablets. A Pocket Therapeutics,** giving dose indications etc and a complete **Therapeutic Price List** will be sent with each case Make it $1 50 and we'll send a twelve vial case and for $, so we will send a twenty-four These cases purchased (filled) of the manufacturers would cost you almost twice the money If you prefer we will fill the case with tablets instead of granules but if no choice is made granules will be sent Screw-cap vials supplied at 10c per dozen additional Add $1 00 to any of the above for a cloth bound 'Shaller's Guide' to Alkaloidal Medication regular price $1 50 or 50c for paper binding. See third cover page.)

1 Aconitine, gr 1-134	11 Acid Arsenious, gr. 1-67	21 Morphine Sulph., gr 1-12
2 Digitalin, gr 1-67	12 Atropine Sulph., gr. 1-500	22 Quassin, gr. 1-67
3 Hyoscyamine, gr 1-250	13 Brucine, gr. 1-134	23 Veratrine, gr. 1-134
4 Codeine gr 1-67	14 Calcium Sulph., gr. 1-6	24 Zinc Sulph-carbolate, gr. 1-6
5 Podophyllin gr 1-6	15 Calomel gr 1-6	25 Anticonstipation (Waugh's).
6 Strych Arseniate, gr. 1-134	16 Camphor Mono-brom., gr. 1-6	26 Anodyne for Infants. "
7 Copper Arsenite, gr. 1-1000	17 Colchicine, gr. 1-134	27 Caffeine, gr. 1-67
8 Quinine Arseniate, gr. 1-67	18 Emetine, gr. 1-67	28 Conine, gr. 1-134
9 Glonoin (Nit. Glyc.), gr. 1-250	19 Ergotin, gr. 1-6	29 Mercury Protoiodide, gr. 1-6
10 Aloin gr 1-12	20 Lithium Benzoate, gr 1-6	30 Iron Arseniate, gr. 1-67

Mark those you want, cut out this leaf and make your order on the blank below **Add ten cents and we will insure safe delivery.** If you are not satisfied, on receipt of the case and another copy of the CLINIC send all back and we will cancel your subscription and refund your money

RENEWAL NOTICE

While the above premium offers are to new subscribers only, any renewing subscriber may have the same, provided a new subscriber be sent with the renewal, in which case the indicated premium will be sent to each. If your old case is shabby, doctor, this is the best way to get a new one

WE WANT YOUR SUBSCRIPTION

We can give you a full file for '97 if desired

ORDER BLANK

THE ALKALOIDAL CLINIC.
Station X, CHICAGO.

Enclosed find $ . . for which you will please enter my name as a subscriber to THE CLINIC for one year (. . issue received), and send me your . . . . . vial "Premium Case," filled, as selected above.

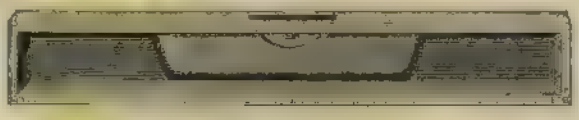
This order is given with the understanding that if all is not found as represented, I may return premium case and Clinics and you will refund my money

DR.... ... ...

IRON LEVELS, No. 100.

Iron Level with Double Plumb, No. 6, 9 inch.

Iron Level with Double Plumb, No. 5, 6 inch.

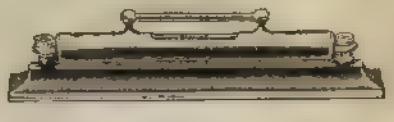


Iron Bench Level No. 4, 6 inch.

Every one is warranted accurate.

No. 1.	Bench Level, 2½ inch	.....	$0.25
" 2.	" " 3½ "	.....	.30
" 3.	" " 4 "	.....	.65
" 4.	" " 6 "	.....	.75
" 5.	" " Double Plumb, 6 inch		1.50
" 6.	" " " " 9 "		1.65
No. 7.	Bench Level, Double Plumb, 12 inch		$1.75
" 9.	" " " " 15 "		2.00
" 10.	" " " " 24 "		2.25
" 11.	Pocket Level, Nickel-Plated, 2½"		.60
" 12.	" " " " 3½"		.75

NEW ADJUSTABLE BENCH LEVELS, No. 95.



With ground and graduated vials—very sensitive and accurate. These levels are so constructed that they can be very accurately adjusted and when so adjusted are not liable to get out of truth, the vials being set in tubes having solid ends which are firmly clamped to the base. The tubes are nickel-plated, the bases japanned or nickel-plated.

4 inch,	with Ground Vial	.....	$2.25
6 "	" " " and handle	.....	3.50
8 "	" " " "	.....	4.00
4 inch,	with Plain Vial	.....	$1.00
6 "	" " "	.....	1.25
8 "	" " "	.....	1.50

With Nickel-Plated Base, 15 cents extra.

POCKET LEVELS.

Style A.

Iron	per doz,	$2.00
Each		.15
Brass	per doz,	3.00
Each		.35

The top plate is brass

MACHINISTS' IRON LEVELS.

Iron Level, brass-top plate, 4 inches	per doz.,	$3.50	Each, 30c.
" " " " 6 "	"	4.50	" 40c.

Carpenters Levels, plain or adjustable, 10 to 30 inches, 50c. to $3.00 each.

POCKET LEVELS.

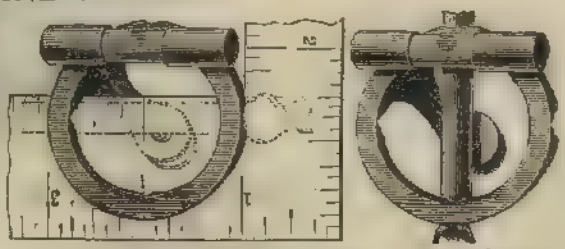
Style B.

Iron, with brass-top plate	per doz.,	$3.50
Each		.20

BIT AND SQUARE LEVELS.

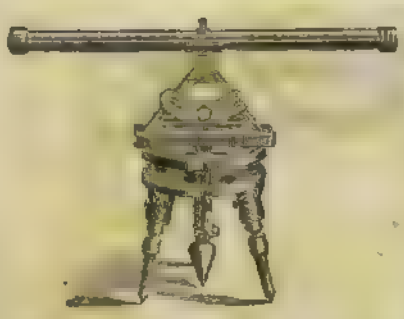
The frame of this Level has three pairs of V slots on its back edges. The shank to a bit will lie in these slots, either parallel with the bubble-glass, at an exact angle to it, or at an angle of 45 degrees. A thumb screw secures the Level to the bit, in either position; and boring can be done with perfect accuracy as to perpendicular, horizontal, or angle of 45 degrees, by observing the bubble-glass while turning the bit

The frame can also be attached to a carpenters' square. Two shoulders rest on the top of the horizontal leg to the square, thus making it an accurate spirit level; and the upright leg of the square will then indicate an exact plumb-line.



Bit and Square Level, brass frame, 1 in a box	per doz.,	$3.60	Each, 30c.

TRANSIT, No. 99.



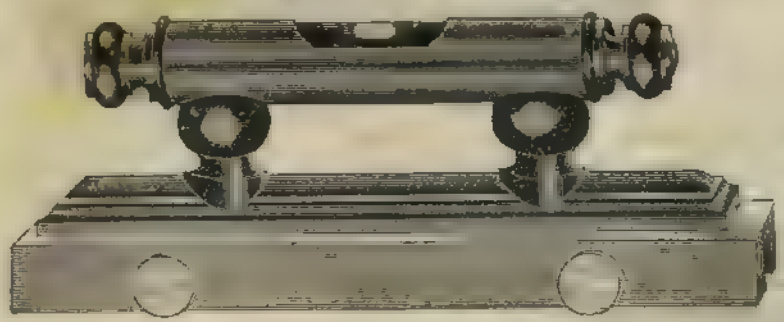
This instrument is designed especially for Architects and Builders, who often require the use of a level and a few angles, and do not feel like paying for an Engineer's Transit. The instrument is composed of iron and brass, and consists of a tripod, to the head of which is connected by a ball and socket joint an upper plate, which can be leveled by the leveling screws. This plate is recessed to contain a graduated arc for taking angles. On this plate rests a triangular frame, to which is attached a level, a graduated arc for taking vertical angles, and a sight tube. The plain sight tube has no lenses, is brass [illegible] inches long, [illegible] and is simply an aperture, in the other the usual cross wires. The telescope has cross lines, is adjustable to distances, and is same size and length as plain sight tube. With short legs, as shown in the cut, the instrument is eight inches high. With long extension legs, which fasten on over the short, the height can be from two feet eight inches to four feet eight inches. The sight tube, level, as also the graduated arcs are nickel-plated, the other parts are [illegible]. The advantages of this Transit are as follows. The head is held to the tripod with a ball and nut, so as to make it easy at any given point the graduated arc can be clamped to the base plate by turning a screw, an arrangement [illegible]. All points taken into consideration, this Transit is one of the best of its kind in the market. It is adapted to almost all kinds of work, and is made of the best of materials, and adjusted by skilled workmen. It is warranted perfect and accurate in every respect. When packed and ready for shipment it weighs about 15 pounds.

With Plain Sight Tube and Long Legs	$16.50
" " " " " Short Legs	15.00
" " " " " Long Legs and Ground Level Vial	18.00
" " " " " Short Legs " " " "	16.50
" Telescope, Long Legs and Ground Level Vial	28.00
" " Short Legs " " " "	26.50
Compass, about 2 inches diameter, extra	5.00
Target, to go on common 10 foot pole, extra	1.50

LEVELING INSTRUMENTS, No. 101.

Warranted to be true in every respect. The best, the cheapest and most durable in the market for the money. It is adapted for the use of Architects, Carpenters, Builders, Stone Masons, and others, for leveling, getting angles, etc. It is made of iron and brass which is japanned and nickeled, and of all brass nickeled. It weighs when packed in box for shipment 13¼ pounds. Directions sent with instrument.

Japanned, Nickeled Tube	$12.50
" " " with Surveyor's Ground Glass in Level	14.00
All Brass, Nickeled	17.50
" " " with Surveyor's Ground Glass in Level,	19.00



IRON BENCH LEVELS.

New Design.

Length, 3 in. per doz.,	$6.00
Each	.50
Length, 5 in. per doz.	9.00
Each	.75

IRON BENCH LEVELS FOR SQUARE OR STRAIGHT EDGE.

New Design.

Length, 3 in. . . . . per doz., $8.00

Each 67

IMPORTED BRASS POCKET LEVELS.

Length	2½	3	4	5	6	9	12 in.
Each	$0.45	.45	50	.55	.65	1.15	1.75

CHACE'S PATENT OILERS.

Zinc Oilers with Tin Bottoms.

No. 00	per doz.,	$1.00	No. 3	per doz.,	$2.25
" 0	"	1.25	" 4	"	2.75
" 1	"	1.50	" 5	"	3.50
" 1½	"	1.75	" 6	"	4.50
" 2	"	2.00			

Zinc Oilers with Brass Bottoms.

No. 00	per doz.,	$1.25	No. 3	per doz.,	$3.00
" 0	"	1.50	" 4	"	3.50
" 1	"	1.75	" 5	"	4.50
" 1½	"	2.00	" 6	"	5.50
" 2	"	2.50			

Brass Oilers.

No 0	per doz.,	$2.25	No 3	per doz.,	$4.00
" 1	"	2.50	" 4	"	4.75
" 1½	"	3.00	" 5	"	6.00
" 2	"	3.50	" 6	"	7.50

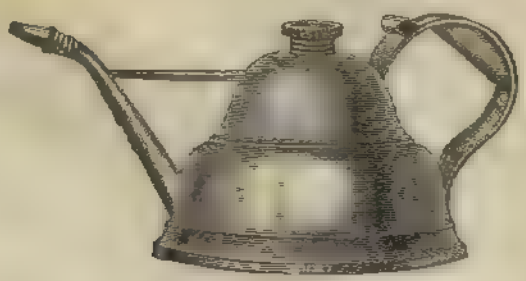
Copper Oilers.

No. 0	per doz.,	$2.50	No 3	per doz.,	$4.25
" 1	"	2.75	" 4	"	5.00
" 1½	"	3.25	" 5	"	6.25
" 2	"	3.75	" 6	"	8.00

Zinc...per gross, $10.00
Tin.... " 10.00
Japanned " 10.00
Tin, small, " 9.50

With Stoppers, 50 Cents per gross extra to net price.

ZINC OIL FILLERS.



We call your attention to a feature of the Oil Filler, illustrated above. By the combination of the Boy Vented Screw and Fisher Spout, with which it is fitted, the flow can be graduated or instantly stopped by pressure of the finger. The quart and pint sizes make admirable Lamp Fillers.

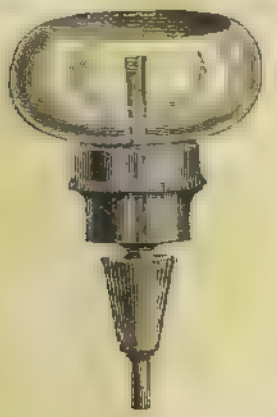
1 gill	per doz.,	$3.00
½ pint	"	3.50
1 "	"	4.00
1½ "	"	5.00
1 quart	"	6.00

ENGINEERS' DRIP OILERS.

1 pint	per doz.,	$3.75
1½ pint	"	4.25
1 quart	"	4.50

SELF OILERS.

For Shafting and Pulleys.



No. 9.

No. 10.

No. 10 W.B.

DIRECTIONS FOR USING.—Fill the cup full of oil; then screw the cup down air-tight. Place the tube in the oil hole in an upright position or upon an angle of 45 degrees. Permit the rod to rest upon the journal, and have a perfectly free action in the cup. If you desire the oil to flow faster, reduce the size of the wire.

		Capacity, Ounces.	Diameter, In.	Height, In.	Per Dozen.
No. 9.	For Shaftings, Pickers, Looms, and Fans..	1½	2⅛	3¼	$4.50
No. 9WB.	For Compact Shaftings and Connections...	1½	1¾	3¼	4.50
No. 10.	For Shaftings Pickers, Looms, and Fans .	3½	2¼	4¼	4.50
No. 10WB.	For Compact Shaftings and Connections...	3	2	4¼	4.50

PARAGON OILERS.

Zinc Oilers with Tin Bottoms.

No. 0	per doz., $2.00	No. 3	per doz., $3.25
" 1	" 2.25	" 4	" 3.75
" 1½	" 2.50	" 5	" 4.50
" 2	" 3.00	" 6	" 5.50

Zinc Oilers with Brass Bottoms.

No. 0	per doz., $2.25	No. 3	per doz., $4.00
" 1	" 2.50	" 4	" 4.50
" 1½	" 3.00	" 5	" 5.50
" 2	" 3.50	" 6	" 6.50

Brass Oilers.

No. 0	per doz., $3.00	No. 3	per doz., $5.25
" 1	" 3.50	" 4	" 6.00
" 1½	" 4.00	" 5	" 7.00
" 2	" 4.50	" 6	" 8.50

Copper Oilers.

No. 0	per doz., $3.25	No. 3	per doz., $5.50
" 1	" 3.75	" 4	" 6.25
" 1½	" 4.25	" 5	" 7.25
" 2	" 4.75	" 6	" 8.75

PATENT AUTOMATIC OILERS.

Self Righting.

Zinc.

No. 0	per dozen,	$3.00
" 1	"	3.50
" 2	"	4.00
" 3	"	4.50

Brass.

No. 0	per dozen,	$5.00
" 1	"	5.50
" 2	"	6.50
" 3	"	7.50

Copper.

No. 0	per dozen,	$5.25
" 1	"	5.75
" 2	"	6.75
" 3	"	7.75

NEW PRICES

ON

COLUMBIA BICYCLES

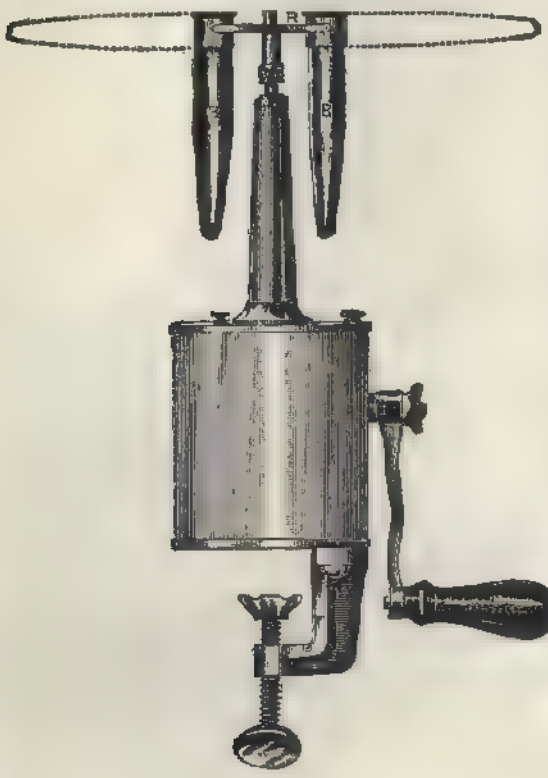
THE STANDARD OF THE WORLD.

1897 COLUMBIAS THE BEST BICYCLES MADE,	Reduced to	$75
1896 COLUMBIAS SECOND only to 1897 MODELS,	Reduced to	60
1897 HARTFORDS EQUAL TO MOST BICYCLES,	Reduced to	50
HARTFORDS PATTERN 2,	Reduced to	45
HARTFORDS PATTERN 1,	Reduced to	40
HARTFORDS PATTERNS 5 and 6,	Reduced to	30

Nothing in the market approached the value of these bicycles at the former prices; what are they now?

POPE MFG. CO., HARTFORD, CONN.

Catalogue free from any Columbia dealer; by mail for 2c stamp.



IT IS A GREAT THING

(1) To be able to examine blood, pus sputum urine, etc., at once without waiting for the usual slow process of sedimentation

(2) To show your patient on the spot just the proportion of his red and white blood-corpuscles and demonstrate to him just what he lacks

(3) To be sure that if a given specimen of sputum has any bacilli in it you have got them.

This New Hand Centrifuge

will do all this and much more It is always ready for use It is simple, reliable and durable —guaranteed in every particular.

Accessories: Two urine tubes, one urine tube, graduated in tenths from one-tenth to ten cubic centimeters, for the immediate quantitive analysis of the urinary chlorides phosphates, sulphates, albumin, blood pus etc; one Hematokrit attachment, comprising two graduated blood tubes fitting into a metallic frame two plain tubes, for sputum pus, etc., one suction tube; one pipette, one steel rod, two aluminum receptacles for the urine tubes.

Price, $25.00 net.

Doctor, you have been wanting something of this kind; this is your chance.

The Abbott Alkaloidal Co.

Station X, CHICAGO.

RESINOL IN PRURITUS

(R: *Unguentum Resinol.*)

From W. J. Brandt, M. D., Brooklyn, N. Y.

Surely in your preparation Resinol, you have a most wonderful curative remedy. The quantity I received from you I have used upon myself and the past two weeks have been a paradise compared with a year's annoyance from pruritus ani. For this most annoying and distressing affection I had tried the recommended preparations, powders, hot applications, etc., etc., from all no relief. The first application gave relief, lasting for several days. From the use of Resinol my relief has been *complete* and *absolute*.

From W. H. Kensinger, M. D., North Cramer Hill, N. J.

I believe it is due to you that the preparation which I believe stands at the head of the list for the treatment of pruritus ani and similar troubles to test my personal experience. Having had pruritus ani for fifteen years, during which time I have tried many of the so-called remedies, and many which proved to be hideous humbugs, and suffering from the most obnoxious conditions, I received from you a sample of Resinol, and after using the first application I ordered several jars of the Ointment. The first application relieved me, and since using the several jars of Resinol Ointment which I ordered, I have been entirely free from the disease. During the hot weather I used it with marked results in a case of pruritus vulvæ of long standing. After using Resinol three months the pruritus gradually disappeared, and I believe has resisted all treatment with the exception of Resinol.

From J. C. Holmes, M. D., [illegible], N. Y.

Resinol, the greatest discovery of the age, will in all you claim for it. I have used it with marked success in a number of very obstinate cases of skin diseases. I have so completely cured myself of pruritus ani of eighteen years' standing, which has resisted all other treatment although I had used everything I ever heard or read of!

From H. B. Leighton, M. D., Bo[illegible]

I used your [illegible] pruritus ani, which had troubled me for years, defying all treatment. The application proved effectual, and I have since used Resinol in prescribing Resinol Ointment for this and all other itching troubles, and find it the most efficient remedy I have ever used for the diseases for which it is recommended.

From J. Wood, M. D., Unionville, Mich.

I have been actively engaged in the practice of medicine for thirty years, and have used many proprietary medicines my approval of which has never been a terrible sufferer from pruritus ani, and having tried every known remedy without relief, I prepared myself to try Resinol, which I am pleased to say relieved me. I experienced warm application and relief in a few days. I have since used it in preference to any other remedy.

From [illegible] Green, M. D., Whitewater, W.

[illegible] for the relief of pruritus ani, and after a fair trial of Resinol Ointment I am pleased to say that it has relieved me of this annoying affection as it has no other application has ever done.

From W. Greenfield, M. D., Detroit.

I used Resinol quite successfully in the most obstinate case of eczema pustulosa that I have ever had in my hands, and my means were only attended with partial relief until I prescribed Ungt. Resinol which gave the only permanent aid.

From H. B. Liggett, M. D., Physician to Taylor County Infirmary, Conway, Iowa.

I have used Resinol in many cases of pruritus ani, and have found it to be a most valuable remedy in the treatment of this disease.

From Lyman A. Clark, M. D., [illegible], N. Y.

I have had pruritus ani for many years, and have found every thing I could get without any help, but was relieved from the distressing affection of Resinol, and for the comfort I have derived thank you too much. I shall always recommend it wherever I can and trust it will continue to be a success for me.

From E. C. Greene, M. D., Alfred Station, N. Y.

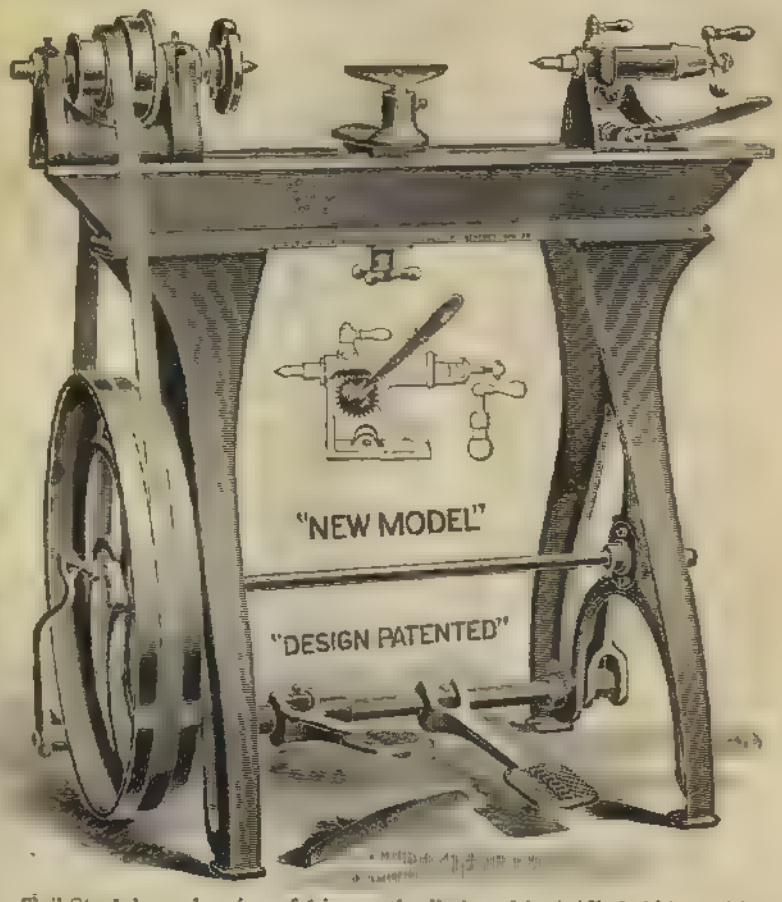
Accept my thanks for the sample of Resinol sent me some weeks since, and allow me to state that I have practiced medicine for fifty-six years, but never before found a remedy that would silence that arch-enemy called "pruritus ani," and at one shot.

RESINOL is put up in one-ounce jars at 50 cents each, and can be obtained at any drug store. Sample sent free on application.

RESINOL CHEMICAL CO., BALTIMORE, MD.

"CROWN" HAND LATHE.

10-Inch Swing New Model. For Foot or Steam Power.



This is a strong, substantial and thoroughly well-built Lathe. It has a broad, heavy, solid bed (with two V ways), and all parts proportionately heavy. Will take work to its full capacity without trembling or jarring. The Tail-stock Spindle has an improved combination lever and screw motion which can be instantly changed from one to the other. For rapid work the lever motion is invaluable feature and will be appreciated by all mechanics. It is designed for metal work as turning, boring, drilling, polishing, etc., but with the addition of one each screw chuck, cup and spur center, which are sold extra, is equally desirable for wood turning.

SPECIFICATIONS.

HEAD. Spindle is made from a Crucible Steel Forging 1⅝ in. diameter, and has ⅞ in. hole through it. Bearings are Phosphor Bronze. Centers are Standard Taper ½ in. to the foot. Cone Pulley is perfectly balanced and has three (3) sections, 3⅛ in., 4¼ in., 5⅜ in. diameter, respectively for 1¼ in. belt. Back gears furnished if desired. See price below.

TAIL STOCK. Spindle of Steel 1 in. diameter, arranged with our Improved Combination Lever and Screw Motion; also Self-Discharging Center, and our Improved Spindle Locking Device which insures perfect alignment. Tail Stock has a bearing of 6-in. on the Bed, and is rigidly held in position by a Cam Locking arrangement.

REST. Plain Hand Rest with Short and Long T Rests. Slide Rest is furnished as an Extra Attachment. See price below.

FOOT POWER. Consists of Double Treadles, with a walking motion. The Treadles are movable and work independently of each other, each being connected at opposite ends of the Driving Wheel Shaft in such a manner as to produce a strong, positive and continuous power. It can be started or stopped instantly, and may be operated with both feet sitting, or with one foot standing, as desired.

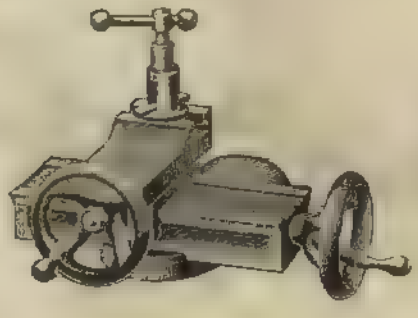
Each Lathe is provided with two Point Centers, Wrench and everything complete as shown in cut.

Number.	Swing Over Bed.	Distance Between Centers.	Length of Bed.	Weight.	Price with Foot Power.	Price with Countershaft
3	10 inches	24 inches	44 inches	300 lbs.	$55 00	$55 00
4	10 inches	36 inches	56 inches	330 lbs.	60 00	60 00

Back Gears for Nos. 3 or 4 Crown Lathes.....$15.00

No. 10 Crown Countershaft for Nos. 3 or 4 Crown Lathes.....$10.00

Unless otherwise specified, we will send Lathes with *Foot Power*, as shown in cut.



No. 10 CROWN SLIDE REST.

The Slide Rest is designed to suit the Crown Lathe, but may be used on any 10-inch Lathe. It is a thoroughly well made tool and very desirable for working in metals. It will turn either straight or tapering and face or square up surfaces to the full capacity of the Lathe, and has the Bevel Rest which permits the vertical adjustment of the tool without altering its pitch. It swings the full circle on Bed Plate. The cross feed is two inches and longitudinal feed five inches.

PRICE.

No. 10 Crown Slide Rest for Nos. 3 or 4 Crown or any 10-inch Lathe.....$15.00

STAR LATHE.

1896 Model. 9-Inch Swing.

This is a new and improved Back Gear Screw Cutting Lathe, with automatic cross feed, etc. It has a broad, heavy, bed (with four V ways) and all other parts being proportionately heavy will take work to its full capacity without trembling or jarring, this, in connection with many other features, make it a serviceable and thoroughly reliable tool. Will cut all STANDARD threads from 3 to 64 inclusive, without compounding the gears, and nearly all threads by compounding them. Spindle is made from Steel Forging 1⅛ in. diameter, and has ½ in. hole through it. Bearings are Phosphor Bronze.

The Rack, Small Gears, and all Working Screws are made from Steel, the Rack and all Gears being cut by Automatic Machinery, run smoothly. All small parts liable to be bruised are *Case-hardened*. Each Lathe is provided with a Center Rest, Follower Rest, 2 Point Centers, a full set of Change Gears, Wrenches, and everything complete as shown in cut.

Countershaft with foot power $10.00 extra.

For extra parts for this Lathe see next page.

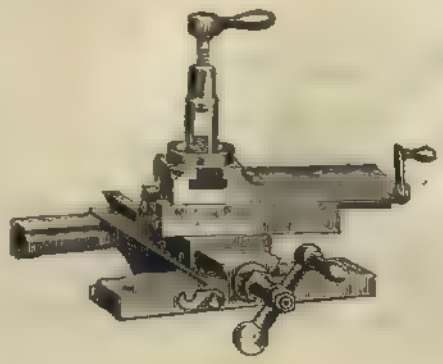
Lathe tools, ⅜x¾ in., set of ten, $3.50.

Number.	Swing Over Bed.	Distance Between Centers.	Length of Bed	Weight.	Price with Foot Power	Price with Countershaft.
10	9 inches	24 inches	44 inches	370 lbs.	$100 00	$100 00
20	9 inches	36 inches	56 inches	400 lbs.	110 00	110 00

Blocking to raise *Head* and *Tail Stocks* and *Tool Post* to make swing 13 inches ... $10 00
This Blocking should be *fitted* to the *Lathe* before it leaves our Factory.
Unless otherwise specified, we will send Lathes with *Foot Power*, as shown in cut.

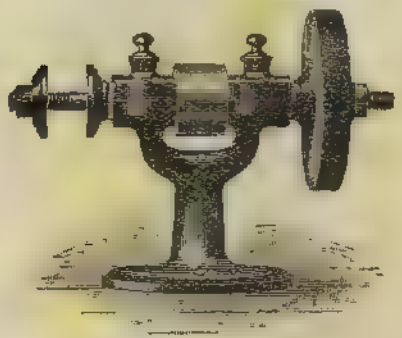
STAR COMPOUND REST.

These rests can be fitted to either the 9-in. or 11-in. swing "Star" Lathes. They must be fitted to Lathes before they leave the shop, otherwise the top part of the carriage would have to be taken off and returned to us.



PRICES.

No. 9 "Star" Compound Rest for 9-inch "Star" Lathe..... $15 00
No. 11 "Star" Compound Rest for 11-inch "Star" Lathe..... 20 00



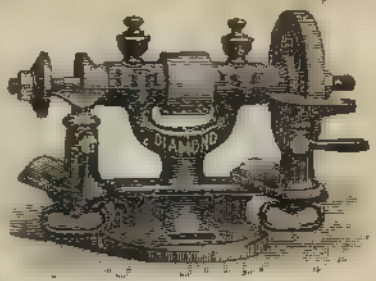
DIAMOND EMERY GRINDERS.

No. 1.

Takes two wheels 6 inches diameter; has steel spindle. Weight, 10 pounds.

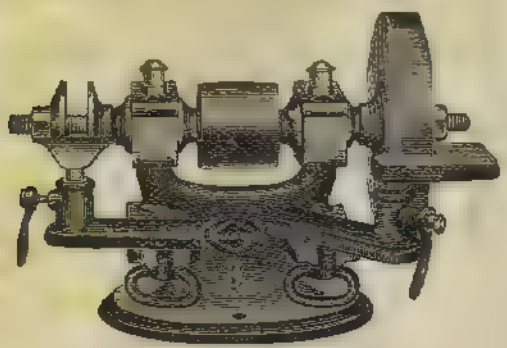
Each $6 00

No. 2.



Takes two wheels 6 inches diameter; has steel spindle and two rests. Weight, 16 pounds.

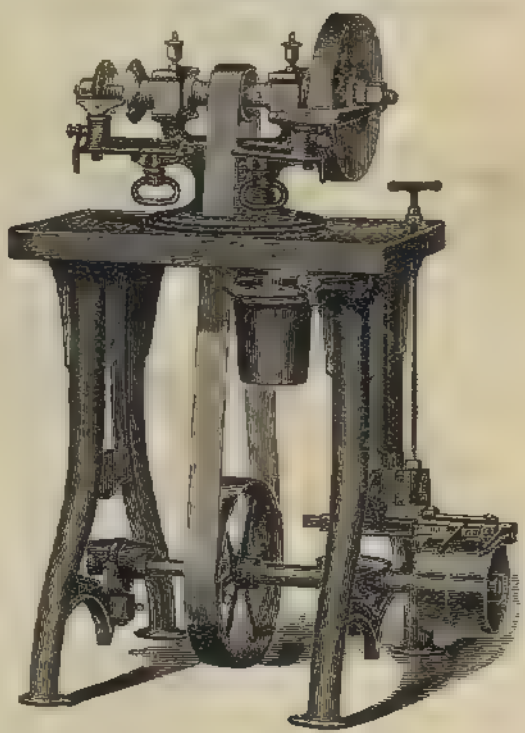
Each, as in cut ..... $ 8.50
With Column and Countershaft 28.50



No. 3.

Takes two wheels 9 inches diameter; has steel spindle and two rests. Weight, 35 pounds.

Each, as in cut $16.00
With Column and Countershaft 40.00

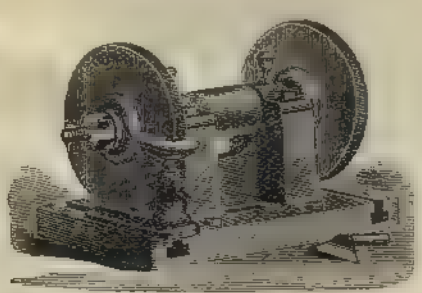


No. 4.

Will run two wheels 12 inches diameter; has steel spindle and two rests.

Weight complete, as in cut, 285 pounds.

Complete, as in cut $60.00
Without Stand or Countershaft 28.00

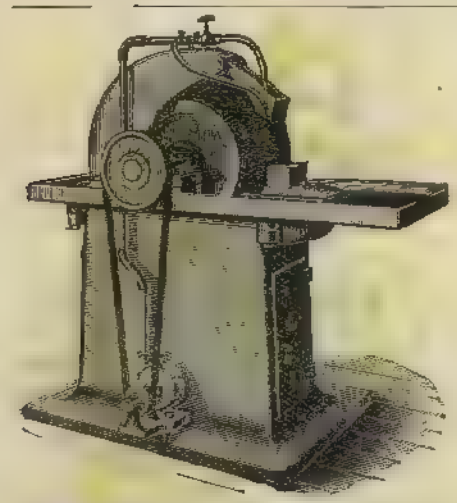


EMERY GRINDERS.

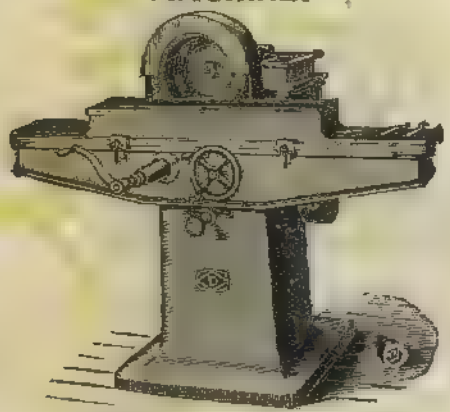
This Grinder has a 1⅜ inch steel spindle, and will carry two wheels, 10 inches in diameter, and 2 inch face, with ¾ inch hole. The rests are held in the T shaped slots in the base of the machine; these extend through, so that the rest can be used on either side of the wheel.

Grinder $15.00
Countershaft 8.00

NOTE.—If we should undertake to illustrate all styles and sizes of Emery Grinders, it would comprise in itself a book as large as this; consequently we show only a few, those that are in daily demand, but shall be pleased to name lowest prices on anything wanted in the Emery Machinery line.



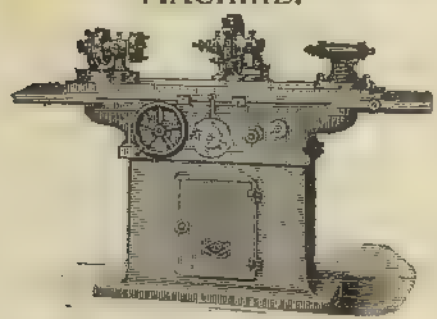
DIAMOND FACE GRINDING MACHINE.



Price including Wheel and with Counter Shaft.

No. 1.—26 in. Face Grinder, weight 1,400 lbs $267.50
No. 2.—30 in. Face Grinder, weight 1,600 lbs 287.50
No. 3.—36 in. Face Grinder, weight 1,800 lbs 325.00

UNIVERSAL GRINDING MACHINE.



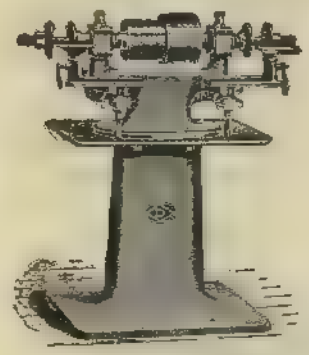
Price, No. 1 Universal Grinding Machine, New Pattern, with Chuck $350.00

Price, No. 2 Universal Grinding Machine, complete with Counter Shafts, Face Plate, Center and Back Rests, Internal Grinding Fixture, Three-jawed Chuck, Wrenches and Dogs 475.00

SINGLE WHEEL TOOL GRINDER.

No. 2, Complete with Wheel 18 x 2½ x 1¼, Counter Shaft and Trueing Device $150.00
No. 3, Complete with Wheel 24 x 3½, Counter Shaft and Trueing Device 250.00

GRINDING MACHINE NO. 6.

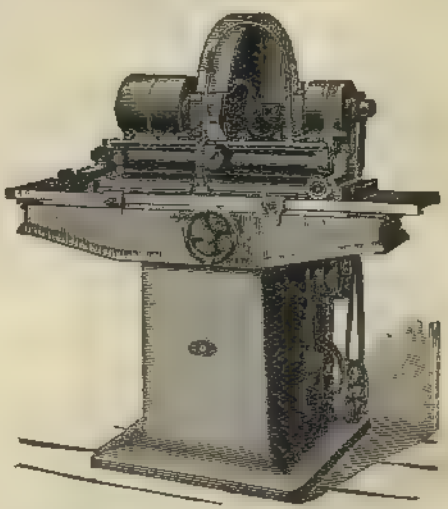


No. 5. Will run two wheels 14 in. diameter, Spindle 1 in. diameter between flanges. Price as in cut, with Counter Shaft $65.00
Price of Grinder Head No. 5 ..... 33.00

No. 6. Will run two wheels 16 in. diameter, Spindle 1¼ in. diameter between flanges. Price on Column with Counter Shaft $80.00
Price of Grinder Head No. 6 ..... 46.00

No. 7. Will run two wheels 20 in. diameter, Spindle 1½ in. diameter between flanges. Price on Column with Counter Shaft $108.00
Price of Grinder Head No. 7 ..... 70.00

IMPROVED DIAMOND AUTOMATIC KNIFE GRINDER.



Size of Base on Floor, 24 x 24.
Height from floor to center of Spindle, 38 inches.

26 in. including Wheel and with tight and loose pulley, weight 1,000 lbs. Price $187.50
30 in. including Wheel and with tight and loose pulley, weight 1,100 lbs. Price 200.00
36 in. including wheel and with tight and loose pulley, weight 1,200 lbs. Price 250.00

Add $25.00 to list price for Automatic Pump and Connections.

Price of Counter Shaft for this Machine, $18.00. Has tight and loose pulley 8 x 4½. Drop of Hangers, 10 inches. Single driving pulley, 13 x 4½.

Buckley's... Uterine Tonic

Is a remarkable relief and usually a permanent cure for pelvic difficulties.

FORMULA:

Helonin, caulophyllin and macrotin, each gr. 1-6; hyoscyamine amorphous, gr. 1-250.

PRICE, POSTPAID:

Per box (12 vials of 25 each), $1.00; sample vial, 25, 10c; per bottle of 100, 35c; 500, $1.50; 1,000, $2.75.

Descriptive literature with each order or on request.

It is worth your while, Doctor, to get acquainted with this helper. If you are not satisfied with results we will refund your money.

EXTRACT FROM OUR LETTER OF AUTHORITY.

I have never used this formula prior to before test its reputation should be established by its being placed upon many manufacturers upon whose preparations one can not depend but, after putting the granules you have made for me to careful clinical tests, I unqualifedly pronounce them the finest I have ever had and hereby sanction your placing them in your list with the sole right to use my name and formula.

I trust they will prove instrumental, in the hands of my co-workers in doing much good. Wishing you the best of success in your labors I am.

Yours fraternally,

W. C. BUCKLEY, M. D.

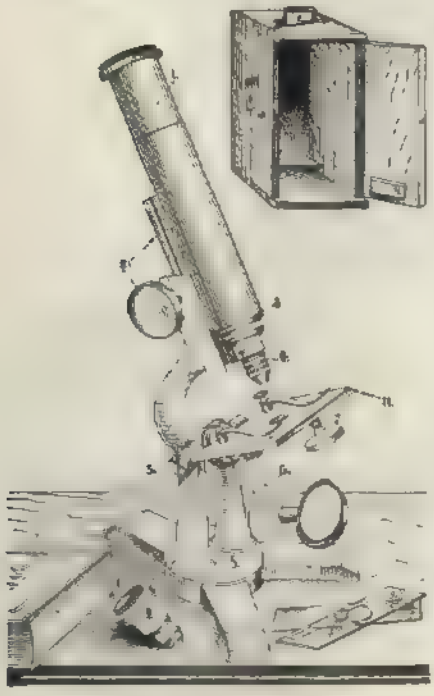
723 Berks St., Philadelphia, Pa

We prepare this granule after Dr. Buckley's formula and directions, hold letters patent for the same, and are the only authorized manufacturers of his preparations.

The Abbott Alkaloidal Co.,

STATION X, CHICAGO.

THE DOCTOR'S MICROSCOPE



EVERY PHYSICIAN NEEDS A MICROSCOPE

But many are prevented by the price. The one here shown is both good and cheap. It is a nice looking, thoroughly reliable, satisfactory instrument for all work up to 440 diameters—shows the bacillus tuberculosis very well.

DESCRIPTION

1. Showing brass draw-tube partly out, with eye-piece in place.
2. Coarse adjustment—all brass
3. Attachment of objective "society screw" admitting of the use of other objectives.
4. Acromatic 1-5 inch objective in a series of three; each section may be removed to change magnifying power
5. Showing joint in stand
6. Swinging mirror-bar and mirror.
7. Micrometer screw and "fine adjustment." Works perfectly
8. Enameled (black) cast iron foot.
9. Acromatic ⅛ inch objective in two removable sections.
10. The case it comes in—nice polished hard wood.

This is the most servicable instrument ever offered for the money. Complete with a supply of cover-glasses and slides, net cash with order (delivery at purchaser's expense).....$25.00

STOKES' MICROSCOPICAL PRAXIS—How to use the microscope mechanically to best advantage. Post-paid.....$1.50

SIMON'S CLINICAL DIAGNOSIS—What to look for and how to look for it. Post-paid..... 3.50

GLASS SLIDES, 3 X 1, finished edges, per doz., post-paid.. .10

COVER GLASSES, ½ in. in diameter, per doz., post-paid .. .15

If the purchaser of this microscope is not satisfied he may return it and we will refund his money.

The Abbott Alkaloidal Co. Station X, CHICAGO

Advertised only to Medical and Pharmaceutical Press.

DR. J. FEHR'S
Compound Talcum Baby Powder

THE

"HYGIENIC DERMAL POWDER"

For Infants and Adults.

Originally investigated and its therapeutic properties discovered in the year 1868, by DR. FEHR, and introduced to the Medical and the Pharmaceutical Professions in the year 1873.

PROPERTIES—Antiseptic, Antizymotic and Disinfectant.

USEFUL AS A

GENERAL SPRINKLING POWDER,

With positive Hygienic, Prophylactic, and Therapeutic properties.

GOOD IN ALL AFFECTIONS OF THE SKIN.

Sold by the Drug Trade Generally.

Per box, plain	$ .25	Perfumed	$ .50
Per dozen, plain	2.75	Perfumed, per dozen	5.50

THE MANUFACTURER

JULIUS FEHR, M. D.,

ANCIENT PHARMACIST, - - - HOBOKEN, N. J

SHORT STOPS.

Osler vigorously opposes the antiseptic method of treating typhoid and other diseases. But then he is not yet so old but that he can learn.

Pye Smith thinks that water is valuable as a laxative, when half a pint is taken in the morning; as a sedative, in the evening; as a hæmetic, when the skin is cool; as a diaphoretic, when the skin is warm; as an expectorant or a refrigerant. *Chm. Med. Jour.*

It has also been sometimes used as a beverage, and as a detergent lotion, in connection with sodium oleate. But as has been justly remarked, its deleterious effect upon boots should lead us to employ it internally with discrimination.—ED.

For Pneumonia. Stimulate the heart and the vaso motor center by strychnine, gr. 1-30, and nitroglycerin, gr. 1-100, every two hours. This cleans up delirium, cyanosis and dyspnœa, and sustains the vitality until defervescence occurs. *Thomas, Charlotte Med. Jour.*

WE ARE SPECIAL AGENTS
For TYREE'S LITMUS PENCIL.

THE RESULTS obtained from the use of litmus paper are so unsatisfactory and at times so ambiguous and unsteady that no chemist can become acquainted with it. In TYREE'S litmus pencil you have an accurate, economical, lasting, life-time and quick means for testing reaction which is scientific. May be carried in the pocket. **25 cts by mail**

ABBOTT ALKALOIDAL CO., STATION X. CHICAGO.

Please mention THE ALKALOIDAL CLINIC when writing.

. . . CLOCK DEPARTMENT . . .

WONDERFUL VALUES IN CLOCKS NEVER HERETOFORE APPROACHED. A good clock is an absolute necessity in every home, and now that we place them within your reach at such prices as are here quoted, there is no reason why you should not only have a nice ornament for your parlor or sitting room, but for your bedrooms as well. You can now buy two or three clocks for the price you have heretofore asked to pay for one, for the reason that you are getting next to the manufacturer, and you are not paying jobbers' and retailers' GOOD TIME. Made by the Ansonia Clock Co. Remember that WE WARRANT EVERY CLOCK WE SELL TO KEEP

No. 1. Boe.

Heavy nickel case, highly polished, 2-inch dial French bevel plate glass front. The smallest enfant little clock made. Stem wind and dust proof. Details for $1 50.

Our price..... .. ..$ .83
With alarm attachment. 1.13

No. 2. Princess.

Nickel case, highly polished, 4-inch dial, 1 day time. A wonderful clock for the money. Never sold for less than $1.00.

Our price, 69c.

No. 4. Climax.

Heavy nickel case with beveled plate glass front, 5½ inches high, 1 day time. A handsome clock for which retailers ask $2.25.

Our price is $1.63
With alarm attachment. 1.90

No. 5. Luminous Alarm.

Visible in the dark, luminous dial, extra heavy nickel case, 4-inch dial, one day time, alarm attachment. Your retail jeweler asks $3 for this. You may us only..... .. ..$1.19

No. 8. ECHO—Oak.

No. 7. Drop Octagon.

Adapted for churches, schools, halls and offices; veneered, rosewood finish; height, 24 in. 12-inch dial, 8-day time, $3.60
12-inch dial, 8-day strike, 4.15
With calendar dial, extra, .25

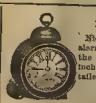
No. 9. EOLA—Oak.

These are the largest, handsomest and best Mantel Clocks made, and we challenge anybody to produce their equal for anything like the money we offer them for. Fitted with eight-day, half-hour slow-strike, back action movement, with patented spring and wire bell strike. Cases highly finished in oak or walnut. Height 24½ inches; width, 12½ inches; dial, 8 inches; weight, boxed, 45 pounds. Your jeweler would ask you $6.00 for this clock, or, if not too grasping, might offer it to you for $5.00.

OUR PRICE FOR EITHER OF THEM IS $3.45.

Can furnish them with Alarm Attachment for 35c. extra; with Cathedral Gong, 35c. extra, or both for 65c. extra.

Compare These Prices with any Other House, and see what you are Saving.



No. 3. Pirate Alarm.

Nickel case, dust proof, with alarm attachment. Will wake the soundest sleeper. Four inch dial, one day time. Retailers ask $1.25.

We sell it for 85c.

No. 6. Calendar "Peep O' Day."

Highly finished, heavy nickel case, with calendar 4-inch dial, one day time and alarm attachment. A beauty, for which you would have to pay others $2.50.

Take it of us for only $1.83.

INTERNATIONAL PUBLISHING CO.
SUPPLY DEPT. PRIZE MEDAL PARIS EXPOSITION TRADE MARK
Chicago Ill. Philadelphia Pa.

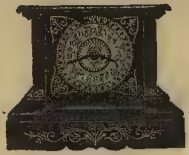
ENAMELED IRON CLOCKS.

These elegant Parlor Clocks have gracefully designed Iron Cases heavily enameled in imitation of black marble and are handsomely decorated, presenting a very rich and artistic appearance. Fitted with eight-day, half-hour, slow-striking Ansonia movements. Cathedral gong in sounding board. Fancy gilt dials.

DOVER.

Dover. Height, 10½ inches; width, 9½ inches; dial, 5 inches. Regular price, $6.60.

We sell it for $5.60.



CARDIFF

Cardiff. Height, 9¼ inches; width, 11¼ inches; dial, 5 inches. An elegant clock, usually valued at $11.00.

Our price, $6.65.

LISLE.

Lisle. Height, 11 inches; width, 10½ inches; dial, 5 in ches. Has gilt trimmings which will not tarnish. Regular price, $12.50.

Our price, $6.65.

CHESTER

Chester. Height, 10½ inches; width, 16 inches; dial, 5½ inches. Handsome gilt feet and side trimmings. Jewelers ask $12.75.

We sell it for $7.60.

CAMBRIDGE

Cambridge. Height, 11¼ inches; width 17 inches; dial, 6 inches. Elegant gilt feet, side and front trimmings. Visible escapement. Regular price, $16 75. Our price, $8 90.

Visible Escapement as shown on the "Cambridge," 50c. additional. Porcelain Dials instead of gilt, 50c. additional.

PORCELAIN CLOCKS.

The Very Latest Thing in Clocks is the New and Magnificent Imported Hand Decorated Porcelain Cases.

THRUSH.

Thrush. Real porcelain with hand painted decoration in colors. Height, 8½ inches; dial, 3 inches; one day time. Retail price, $2.00.

Our price, $1.32.

PARLOR CLOCK No. 173.

Porcelain with colored decorations on green tinted case. A handsome eight-day, half hour strike, beveled plate, 3½ inch ivory dial, with ebony hands, 7½ inches wide. A clock usually sold at $14.00. Our price, $8.50.

CANARY.

Canary. Hand decorated porcelain with one-day time movement and 2-inch dial. Height, 7 inches. Retail price, $3.50.

Our price, $2.32.

The Handsomest and Best Clocks Ever Offered at our Incomparably Low Prices.

The Eureka Nebulizer.

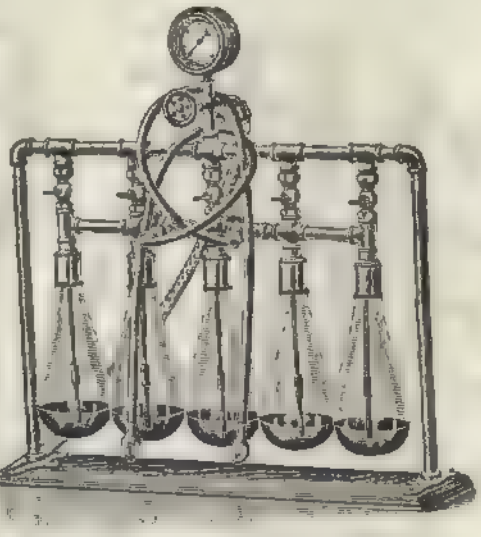


Table Size, 20 1-2 x 5 1-4 inches, 21 inches high.

9½x30 Inches.

Our Combined Air Tank and Pump is a great improvement over the old style arrangement. Heavy copper nickel plated. None better.

The Most Useful and Practical Apparatus Ever Offered to Physicians for the

SPECIAL TREATMENT

of

Chronic Bronchitis, Incipient Consumption

and all **Catarrhal Affectations of the**

Head, Nose, Throat and Lungs.

It is Far better than the Politzer Air Bag and Catheter in the Treatment of Deafness and all conditions requiring Inflation of the Middle Ear.

Forced inhalations promptly arrest the progress of diseases of the air passages, allay irritation in Bronchitis and control the cough, soothe the inflamed membranes, heal ulcerations, stimulate secretions and restore the physiologic functions—promoting a more perfect oxidation in the process of nutrition and assimilation.

The operator has perfect control of the pressure, as the air gauge at all times indicates the exact amount being used. This is very essential and enables the physician to treat children, timid persons or invalids, more successfully than he could do otherwise.

WHAT USERS SAY:

The Eureka Nebulizer is a great success. I am treating nine people who would not be without it. I want another apparatus to treat patients at their homes who are not able to take treatment at my office.

F. T. SEIBERT, M. D., Council Bluffs, Iowa.

Am well pleased with the Eureka Nebulizer apparatus purchased of you. It works charmingly. I have three or four patients I am treating daily. Commenced with six less than two months ago.

F. W. SMILEY, M. D., Kewanee, Ill.

The Eureka Nebulizer and compressed air apparatus, purchased of you over a year since, has increased my office practice from almost nothing to five hours a day. It gives best results. Every progressive physician should have one in his office.

T. B. HERBERT, Gault, Mo.

Write for Price List and Literature

O. Q. HOLMAN, General Agent,

LA GRANGE, ILL.

"WELL PREPARED!! NUTRITIOUS!! EASILY DIGESTED!!"

HIGHEST AWARDS WHEREVER EXHIBITED

THE WORLD'S COLUMBIAN COMMISSION.

IMPERIAL GRANUM

THIS STANDARD PREPARED

FOOD

IS EARNESTLY RECOMMENDED as a most reliable FOOD for INFANTS, CHILDREN and Nursing-Mothers;—for INVALIDS and Convalescents;—for Delicate and Aged persons. It is not a stimulant nor a chemical preparation; but a PURE, unsweetened FOOD carefully prepared from the finest growths of wheat, ON WHICH PHYSICIANS CAN DEPEND in FEVERS and in all gastric and enteric diseases. It is easily digested, nourishing and strengthening, assists nature, never interferes with the action of the medicines prescribed, and IS OFTEN THE ONLY FOOD THE STOMACH CAN RETAIN.

SEEMS TO HOLD FIRST PLACE IN THE ESTIMATION OF MEDICAL OBSERVERS.—*"The Feeding of Infants," in the New York Medical Record.*

A good and well made powder of pleasant flavour. CONTAINS NO TRACE OF ANY IMPURITY.—*The Lancet, London, England.*

A valuable aid to the physician in the treatment of all the graver forms of gastric and enteric diseases.—*The Prescription.*

As a food for patients recovering from shock attending surgical operations IMPERIAL GRANUM stands pre-eminent.—*The International Journal of Surgery, New York.*

Not only palatable, but very easily assimilated.—*The Trained Nurse, New York.*

IMPERIAL GRANUM is acceptable to the palate and also to the most delicate stomach at all periods of life.—*Annual of the Universal Medical Sciences, Philadelphia, Penna.*

Highly recommended and endorsed by the best medical authorities in this country.—*North American Practitioner, Chicago, Ills.*

It has acquired a high reputation, and is adapted to children as well as adults—in fact, we have used it successfully with children from birth.—*The Post Graduate Journal.*

The results attending its use have been very satisfactory.— * * * *M.D., in New York State Medical Reporter*

Especially valuable in fevers, and often the only food the stomach will tolerate in many gastric and enteric diseases.—*Dominion Medical Monthly, Toronto.*

IMPERIAL GRANUM has stood the test of many years, while many competing foods have come and gone, and have been missed by few or none. But it will have satisfactory results in nutrition far into the future, because it is based on merit and proven success in the past.—*The Pharmaceutical Record, N. Y.*

★ 'Physician's-samples' sent free, express-paid, to any physician—or as he may direct. ★

JOHN CARLE & SONS, Wholesale Druggists, 153 Water Street, NEW YORK CITY, N. Y.

Please mention THE ALKALOIDAL CLINIC when writing.

SELF-VULCANIZING SHEET PACKING.

Usudurian	Per lb.	80c.
Jenkins	"	80c.
Everlasting	"	80c.
Rainbow	"	80c.

STEAM PACKING—CLOTH INSERTION.

Cloth on One or Both Sides.

Thickness.		1-Ply	2-Ply.	3-Ply	4-Ply.
1-64 inch.	per lb.,	70c.	....	....	....
1-32 "	"	65c.	....	....	....
1-16 "	"	60c.	63c.	66c.	....
3-32 "	"	55c.	58c.	61c.	....
1-8 "	"	....	55c.	58c.	61c.
3-16 "	"	....	....	....	58c.
1-4 "	"	....	....	....	55c.

There is one ply of cloth to every 1-16 inch thickness. Three cents per pound additional will be charged for each extra ply of cloth. Each cloth, whether insertion or on outside to count as one ply.

HARD RED FIBRE.

For Electrical and Mechanical Construction.

In Sheets 42 x 70 Inches, Red or Gray.

Under 1/32 inch thick	per lb., $0.70	From 1/2 to 1 inch	per lb., $0.60
From 1/32 to 1/16 inch	" .60	" 1 inch	" .05
" 1/16 " 1/8 "	" .50	Black Fibre, 5 cts. per pound additional.	

We can also furnish

Trunk Fibre from 3/64 to 1/8 in. thick. Red or Gray, 50 cts. per pound; Black, 55 cts. per pound.

Tubing from 1/4 to 6 inches inside diameter.

Rods from 1/8 to 1 1/8 inches, in lengths of 3 feet.

Flexible Fibre in sheets or washers of all sizes. Prices on application.

FIBRE PAILS.

Water Pails.

They are made, as shown in cut, with flush bottom, but are provided with a chine for convenience in emptying. Fitted with heavy wire bail and malleable iron ears.

14 Quart,	9 inch deep,	12 inch diam.	per doz.,	$6.00	each,	$0.50
16 "	11½ "	12 "	"	7.20	"	.60
18 "	12 "	12½ "	"	8.40	"	.70
20 "	13 "	12¾ "	"	9.00	"	.75

Round Bottom Fire Pails.

We recommend that these Round Bottom Pails be set in shelves, and for that purpose we are prepared to furnish at cost shelves and brackets for sets of either two, three or four pails.

Use Covers on our Fire Pails to keep out dust and to prevent evaporation and fouling.

11 in. deep over all, 11 in. diameter, capacity about 12 quarts.
Packed 1 doz. in crate, each, $0.65 ..... per doz., $7.80

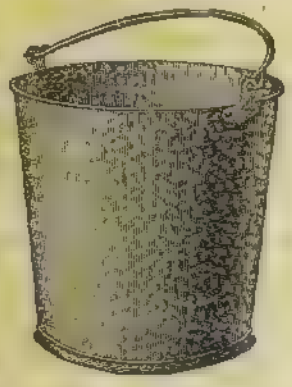
Shelves for two Pails each, complete with brackets and screws
each ..... .60

Shelves for three Pails each, complete with brackets and screws
each ..... .70

Shelves for four Pails each, complete with brackets and screws ..... each, $0.80

GALVANIZED BUCKETS, ETC.

Fire Buckets.



FLAT BOTTOM

10 Quart.....Per doz., $4 50
12 " ..... " 5 00
14 " ..... " 5 50

ROUND BOTTOM.

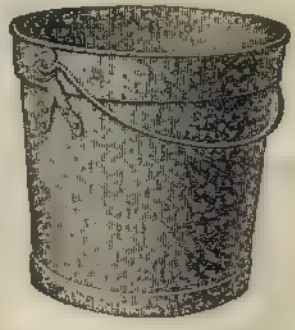
10 Quart.....Per doz., $6 75
12 " ..... " 7 25
14 " ..... " 7 50

Mortar or Cement Pails.

HUDSON RIVER TUNNEL PATTERN

14 Quart, Black Iron.....Per doz., $20 00
14 " Galvanized..... " 22 50

AQUEDUCT PATTERN.



14 Quart, Black Iron.....Per doz., $24 00
14 " Galvanized..... " 26 00

Mill and Factory Water Pots.

6 Quart.....Per doz., $12 00
8 " ..... " 15 00
10 " ..... " 18 00
12 " ..... " 21 00
16 " ..... " 24 00
20 " ..... " 42 00

Foundry Water Pots or Sprinklers.

EXTRA HEAVY

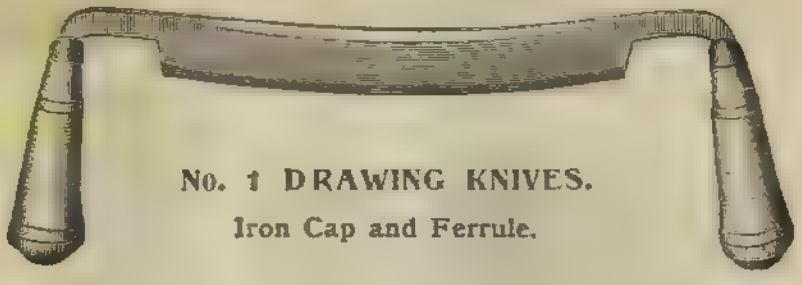
Body and Spout stamped from one piece.
Galvanized after being put together.
Bottom strengthened and reinforced by an additional Bottom made of Wood.

3 Gallon.....Per doz., $42 00
4 " ..... " 48 00
5 " ..... " 54 00

THE FOLDING AND ADJUSTABLE HANDLE DRAW-KNIVES.

The handles can be folded to any desired position, and when closed up form a protection to the edge of the blade.

No.	3
Length of Blade, inches	8
Width of Blade, "	1 1/8
Per dozen	24 00
Each	2.00



No. 1 DRAWING KNIVES.

Iron Cap and Ferrule.

Length, inches	6	7	8	9	10	12	14	16
Per dozen	$16.00	17.00	18.00	19.00	20.00	22.00	25.00	28.00
Each	.65	.70	.75	.80	.85	1.00	1.10	1.25

IMPROVED DRAW-KNIFE CHAMFERER GAUGES.

With Graduated Scale.

No danger of injuring the cutting edge. All classes of wood-workers use them. Prevents the knife from drawing into the work and spoiling it. Makes every chamfer alike and can be adjusted to any width. With this attachment there is no stopping to measure the work for fear of getting off too much, as the user knows before he starts the width of chamfer he will make. Nicely finished and nickel-plated, being made of iron.

Sizes, inches	1	1 1/4	1 1/2	1 3/4
Fits Blades, inches	7/8 to 1	1 1/8 to 1 1/4	1 3/8 to 1 1/2	1 5/8 to 1 3/4
Per dozen				$8.00
Each				.60

Chamferer Gauges made of brass without graduated scale:

Per dozen.....$6.00 | Each $0.50

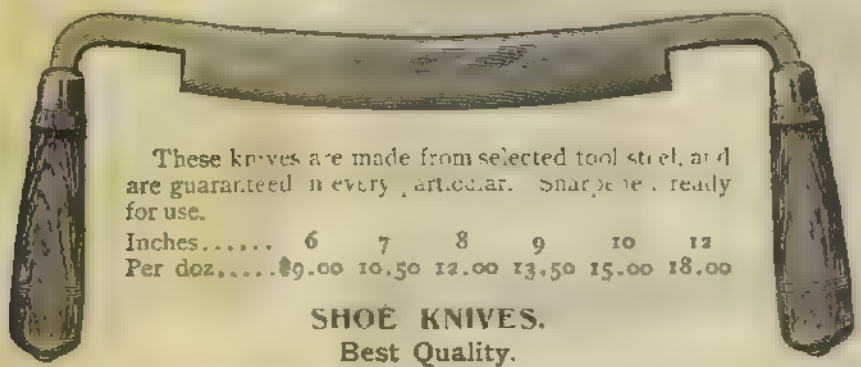
PATTERN-MAKERS' KNIVES.

For wood-workers and all who require a knife to whittle or mark with. It is substantially made the blades 1/8 inch wide in No. 1, and 11/64 inch wide in No. 2, each 6 inches long, are of the best steel, and pass into the metal-tipped cocobola handle. The blade may be securely held at any point desired.

No. 1..... per dozen, $12.00 Each, $1.00 | No. 2.....per dozen, $15 00 Each, $1.25

DRAWING KNIVES.

Extra Quality.



These knives are made from selected tool steel, and are guaranteed in every particular. Sharpened, ready for use.

Inches.....	6	7	8	9	10	12
Per doz.....	$9.00	10.50	12.00	13.50	15.00	18.00

SHOE KNIVES.

Best Quality.

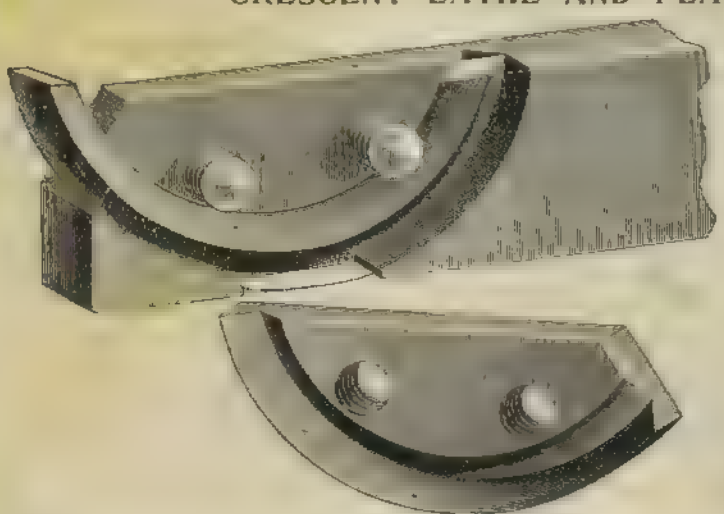
SQUARE POINT KNIVES.

Per doz..... $3.00

CURVED OR ROUND POINT KNIVES.

Per doz..... $3.00

CRESCENT LATHE AND PLANER TOOLS.



By using our Improved Lathe Tool, the following points are gained: The time and expense in labor and material forging a good commonly called "Diamond Point" tool is obviously saved. The cutter being of a uniform temper throughout, can be used up and re-adjusted in holder as long as there is sufficiently clamping surface, allowing two inches of cutting edge. The angle of cutting edge or clearance is also changeable, by having the point projecting above surface of holder, a shaper or planer tool is obtained. The diversity of clearance necessary for efficient working of steel, iron and brass or copper on lathe, planer and shaper; all of those requirements the tool will answer. In grinding it will be observed that a keen cutting edge is obtained on our semi-circular cutter in less time than by grinding a cutter formed of a straight bar of equal dimensions; as any adjustment will raise its point more than the back part of cross section of cutter.

The holder which encloses the cutter gives a bearing the full length and all of its surfaces, besides being fully as strong and better than a forged tool, has no outside projections, it does not occupy more space than a forged tool, and is agreeable to handle. The material employed is of the best quality of tool steel for cutter and machinery steel for holder and side-plate; the screws are case-hardened.

No forging. Economy in grinding. Uniform temper. Diversity of cutting angle. Simplicity and strength of construction.

Size, 1 × 1	$1.50	Extra Cutters, per doz., ¼	$1 80
" 1¼ × ¼	2.00	" " " 5/16	2 80
" 1¼ × ⅜	2.00	" " " ⅜	2 80
" ⅝ × ¾	1.00	" " " 7/16	1.50
Threading Tools	1.75	" " " ½	2.50

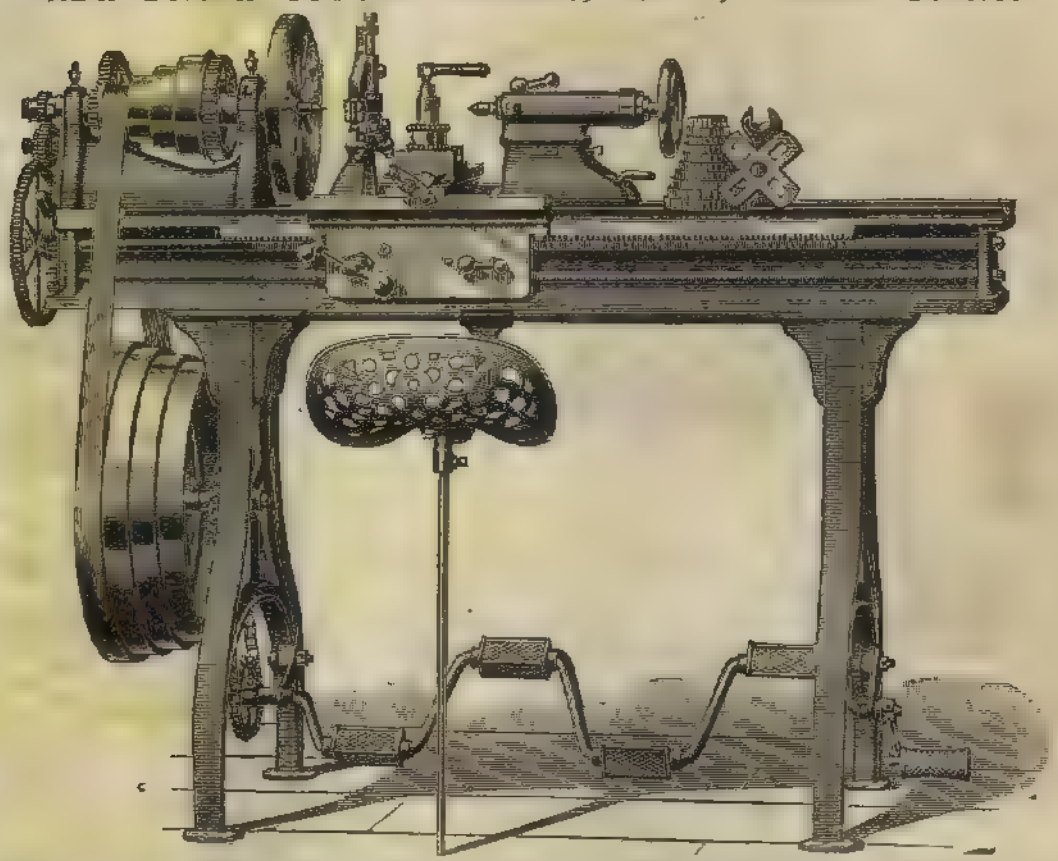
Extra Cutters of "High Grade Special Steel" to order.

NURLING TOOL

Combined with Cutting-Off Tool.

Each $1.50

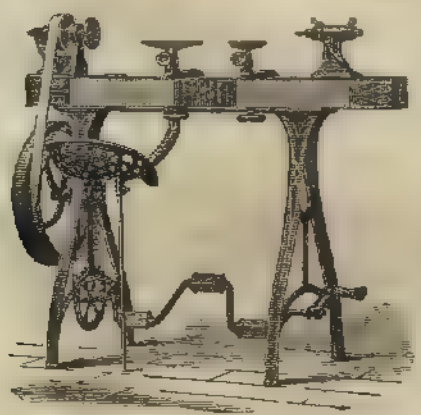
NEW SCREW CUTTING LATHES, No. 5½, 13 INCH SWING.



The No. 5½ Lathe is designed to do as large work as it is practical to do by foot power. It is a strong, substantial Lathe for a job or manufacturing shop where the demand on a Lathe is from the smallest to the largest work. It is low in price because it has the patent twin screw feed and screw cutting combination, which makes change of feed in the tool carriage instead of in the head stock. This greatly simplifies and reduces the number of parts commonly used for these purposes. The tail stock has side movement to adjust centers for turning tapers. The head stock has hollow spindle for rods up to one-half inch. All the gearing is cut from solid metal. All parts are made from steel where this would best serve the purpose. It will cut all ordinary threads from 4 to 40, and miscellaneous threads up to 144. We can furnish the Velocipede Power Lathes with regular treadle power when for any reason it is preferred.

Length of Bed, feet	5	6	7	8
Distance between Centers, inches	33	45	57	69
Swing on Face Plate, inches	13	13	13	13
Swing over Tool Carriage, inches	8	8	8	8
Hollow through Spindle, inch	17/32	17/32	17/32	17/32
Weight of Lathe, lbs	640	690	740	790
Weight, Boxed, lbs	775	830	890	950
Each	$135.00	150.00	165.00	180.00

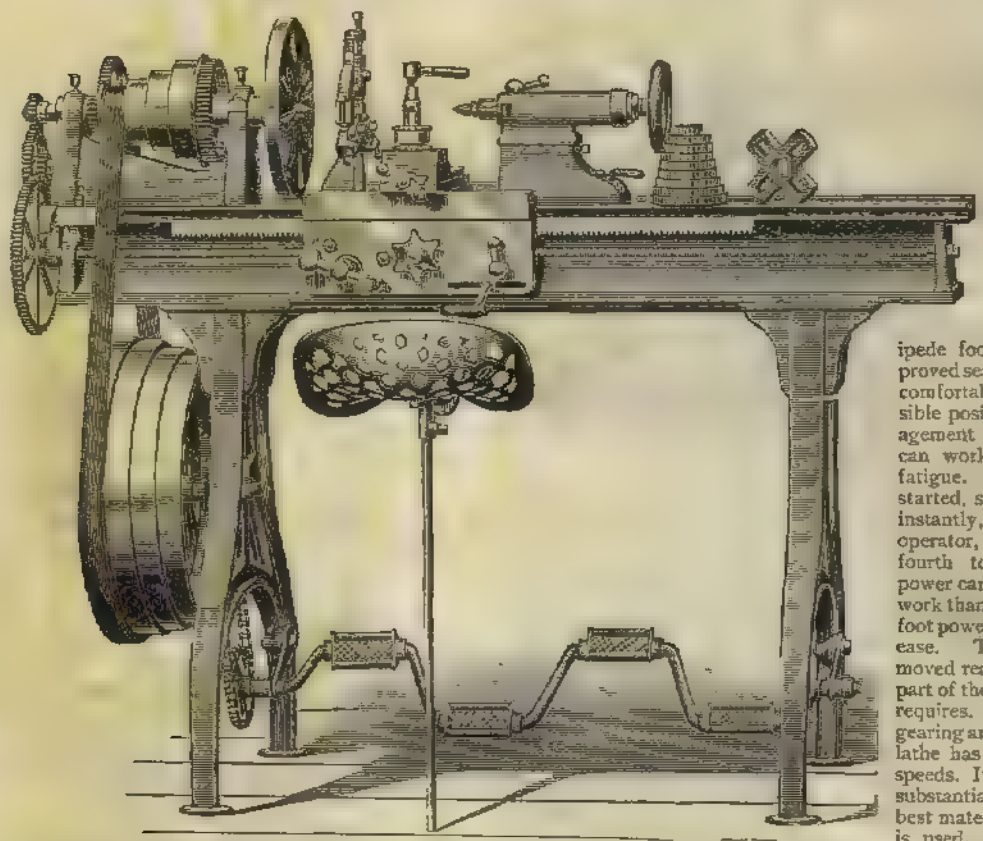
No. 3 LATHES, IMPROVED.



This Lathe is designed for wood turning. It will take in stuff 12 inches in diameter and 3 feet long. Having the Patent Velocipede Foot Power and improved seat, the operator sits comfortably in the best possible position for the management of his work, and can work steadily without fatigue. The speed can be varied from 1,000 to 2,000 revolutions per minute, and the motion can be started, stopped or reversed instantly, at the will of the operator. Greater power can be applied on the work than with any old style foot power, and with greater ease. The seat can be readily moved along to any part of the bed that the work requires. This Lathe is made entirely of iron and steel, except the bed, which is of wood. The spindle is of steel, fitted up in the best manner. All the bearings are of steel, making them strong, durable and light running. The centers are accurately fitted to taper holes. No wrench is required to adjust tail stock or tool rests and sockets, hand-wheels being used instead. Weight, 230 pounds; boxed, ready for shipment, 320 pounds.

Including three centers, (one a spur) two tool rests and sockets, and one turned face-plate ..... each, $35.00
Upper portion of No. 3 Lathe, with short bench legs, each, 20.00
Countershaft 10.00

No. 6 SCREW CUTTING ENGINE LATHES, 13 INCH SWING.



This Lathe embodies those features which go to make up a first-class lathe; one that has all the necessary appliances for the rapid and accurate execution of both light and heavy work. Having the patent velocipede foot power and improved seat, the operator sits comfortably in the best possible position for the management of his work, and can work steadily without fatigue. Motion can be started, stopped or reversed instantly, at the will of the operator, and from one-fourth to one-third more power can be applied on the work than with any old style foot power, and with greater ease. The seat can be moved readily along to any part of the bed that the work requires. With its back gearing and cone pulleys the lathe has a great range of speeds. It is thoroughly and substantially built, and the best material for each part is used. The head stock has a hollow steel spindle that will take a ⅛ inch rod through its entire length. The boxes are accurately fitted to the spindle with provision to keep them true and to take up wear. The tail stock can be readily set at any desired angle, or taken altogether from the lathe bed, without removing nuts or bolts. It can also be set over for turning tapers. The spindles for both head and tail stocks are of steel, with positively true taper holes for the reception of the centers, and the tail stock center is self-discharging. The tool carriage is a model of convenience and accuracy, and is gibbed to the bed. The tool can be set to the work at any position or angle desired also to bore a taper hole or turn a ball, features not ordinarily in the movements of tool carriages. All the works are securely protected from chips and dirt, thus insuring long wear and durability to the most costly and vital parts of the lathe. It has rod and screw feed The rod feed is designed for all ordinary turning, reserving the screw for screw cutting only. By a lever in the apron of the tool carriage, the feed can be graduated instantly from coarse to fine and vice versa. The gear furnished can be combined to make some 500 different leads of thread. As a screw cutting lathe it is simply perfect. All the gearing is cut from solid metal in the best machinery known for gear cutting, and is as true and noiseless as it is possible for metal gear to be.

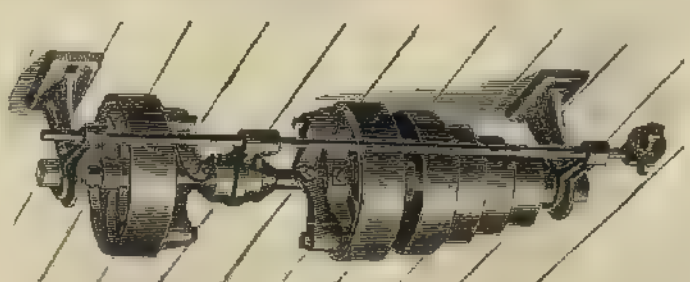
Length of Bed, feet	5	6	7	8
Distance between Centers, inches	33	45	57	69
Swing on Face Plate, inches	13	13	13	13
Swing over Tool Carriage, inches	8	8	8	8
Hollow through Spindle, inch	1⅛	1⅛	1⅛	1⅛
Weight of Lathe, lbs	640	690	740	790
Weight, Boxed, lbs	775	830	890	950
Each	$150.00	165.00	180.00	195.00

For $15 00 extra we can furnish fixtures to raise the head and tail stocks and tool post to bore out and swing 18 inches in diameter

This cut represents a Countershaft for Nos. 5½ and 6 Lathes.

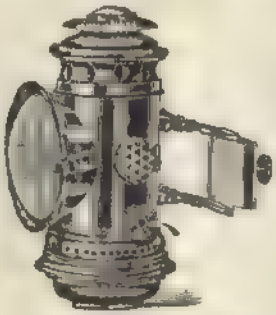
The pulleys on this Countershaft are 7 x 2 inches and should be speeded 225.

Countershaft.....$20.00



The prices on 5½ and 6 Lathes advance $5.00 where Countershaft is taken instead of foot power.

The Celebrated Improved **"Frontlight"** Bicycle Lamp



Weight 13¾ oz. Height [illegible] Diameter of Lens 2½ in.

THE RIDER'S FRIEND

A Strictly High-Class Lamp that gives no trouble, and can be relied upon to stand the roughest riding and the strongest wind.

Gives a Big Light

Thousands are in use in this and other countries, and they have stood the test.

Made entirely of brass, elegantly nickeled and polished. Is easily cleaned. All parts riveted or seamed; no solder to melt. Has locked thumb-screw for attaching to bracket from the lock to prevent wick from dropping. Patented [illegible] spilling of oil. Has no ground bulls-eye lens, very powerful, red and green signaling jewels to light from either side. **Burns kerosene, stays lighted.**

Mailed Anywhere in the United States on Receipt of Price, **$3.00**

Manhattan Brass Company

This Lamp is all right. -Dr. Abbott. 132 Lake Street, CHICAGO

Please mention THE ALKALOIDAL CLINIC when writing.

Dust-Proof Columbias

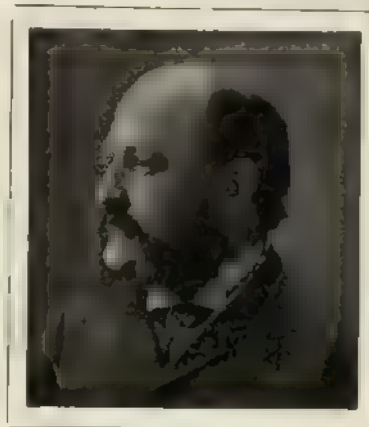
Without an oil hole in the bearings—dust can't get in because there's no place for it to get in, and this is only one of the superlative features of Columbia bicycles for '97.

POPE MFG. CO., Hartford, Conn.

Greatest Bicycle Factory in the World. More than 17 Acres of Floor Space.

Handsomest bicycle catalogue ever issued free, if you call on any Columbia dealer. By mail from us for one 2-cent stamp. If Columbias are not properly represented by your nearest dealer, let us know.

Please mention THE ALKALOIDAL CLINIC when writing.



Truly yours,
William F. Waugh

Dr. Waugh's Book

"The Treatment of the Sick"

Is now in the printer's hands, and will be ready for delivery in a few weeks.

It is a wonderful work, embodying the essence of years of painstaking research and practical proving of ways and means to relieve and heal the sick. As the Doctor says,

"It is what I know about Medicine,

with what I believe to be the best of what others know as found in their writings."

The original manuscript has been revised during the past three months, so that it is strictly up-to-date in every particular.

The finished volume will contain about 600 pages, of usual size, printed from clear, new type on a fine quality of paper, and beautifully and substantially bound in half morocco.

REGULAR PRICE, **$6.00** PER VOLUME, NET

WE SOLICIT YOUR ORDERS

Special Proposition to Advance Purchasers

Send $5 00 now and we will deliver you a volume

....FREE....

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Only Advance Subscribers will receive these terms.

If you are not satisfied on receipt of the book, send it back and we will refund your money.

THE ALKALOIDAL CLINIC PUBLISHING CO., Station X, CHICAGO

ARE YOU USING PEPTENZYME?

Peptenzyme IS THE ONLY PERFECT DIGESTANT

Digests every kind of food, albumen, fat, starch, cane sugar, reducing them to the exact conditions required for assimilation in the organism.

Presents in physiological activity the digestive principles, active and embryo ferments, from all the digestive glands.

Is the only preparation which contains the enzymes isolated by a mechanical process, and unchanged from the condition as found in the living gland.

PEPTENZYME is far superior to any other preparation in the treatment of all disorders of the digestive organs. It promotes digestion, both by aiding and perfecting the process itself, and by stimulating the appetite and secretory functions through the absorption of the embryo ferments. It not only gives immediate relief, but aids in curing Dyspepsia, etc. Pepsin, as found in the market, is prepared only by chemical methods, and has consequently lost most of its physiological properties, and is of little service in aiding digestion.

Peptenzyme is prepared in three forms, Elixir, Powder and Tablets.

SAMPLES, LITERATURE AND DIET LEAFLETS ON REQUEST.

REED & CARNRICK, New York.

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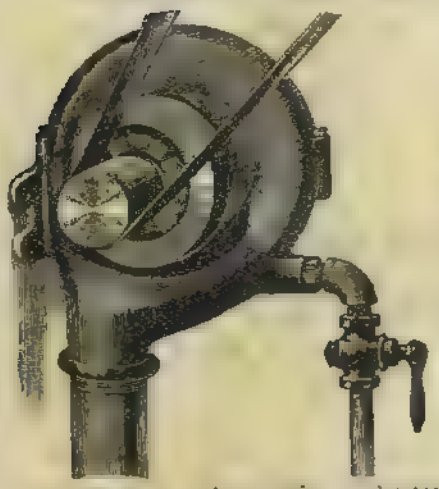


WEED WATER MOTOR.

This motor is built on scientific principles, the mechanical construction is perfect in every detail; the bearings are well proportioned and adjustable. The fly wheel, a novel feature on a water motor forms part of the driving pulley, and is cast solid. Like all other moving parts of the motor it is finished all over, thus insuring a smooth and steady speed under quite a variation of load. The driving pulley is arranged for both a flat and round belt. The moving parts of this motor are so accurately balanced, that when running free under a high pressure at a speed of from three to four thousand revolutions per minute, the motor shows little or no vibration. As will be seen by the illustration, a bracket is cast on the back of the casing so that the motor may be readily attached to the wall. When permanently installed, lead or iron pipe connections are preferable, but satisfactory connections may be made with pressure hose. This Motor (No. 1) will develop a ⅛ horse power under 40 lbs. actual pressure, and is recommended particularly for dentists' and jewelers' use. When it is desirable to transmit the power to a distance from the motor, counter shafts are required.

No. 1 Water Motor.....Each, $10.00

Nozzle for ¼ inch rubber pipe, outlet tapped for ¼ inch iron pipe, driving pulley 2½ inch diameter for flat belt, and grooved 1 inch diameter for round belt.

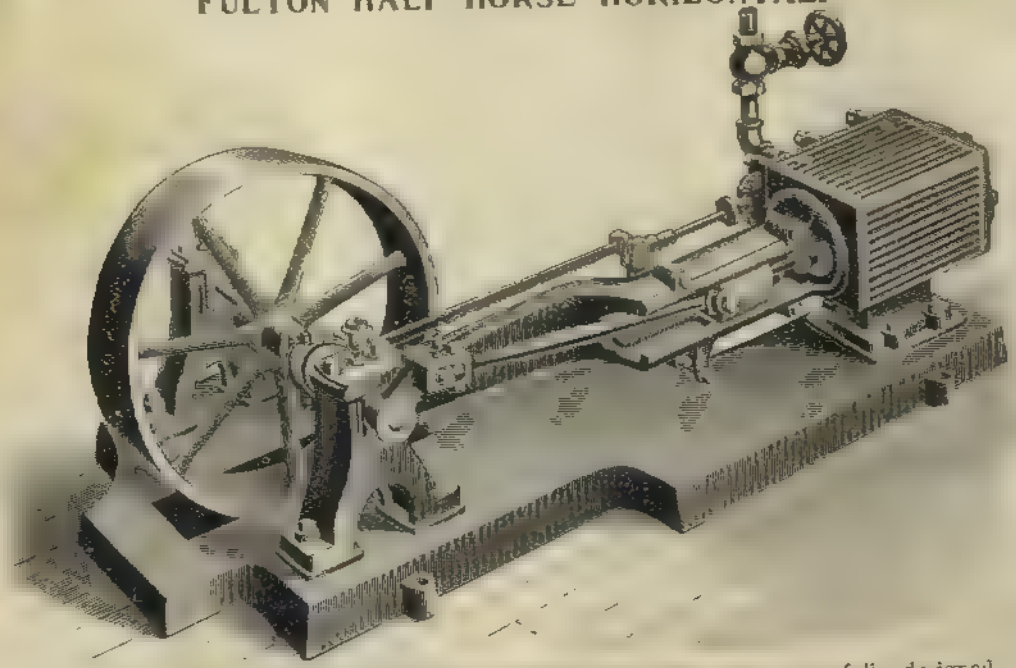
THE FULTON MODEL ENGINES.

These Engines are specially adapted to scientific instruction in Schools and Colleges, as well as to amateur machinists and others, and we believe that those who fit any one of the Fulton sets of castings and derive the consequent practical and scientific knowledge will certainly obtain something that may be of inestimable value later in life.

Castings of the Fulton Engines may be obtained either in the rough or partly finished. Our partly finished castings can be put together by anyone with the most limited facilities.

We have on hand complete sets of screws used on any of the Fulton Engines, and all Drills and Taps needed.

FULTON HALF HORSE HORIZONTAL.



The above cut is of Fulton half horse Horizontal Corliss Type. This engine is carefully designed, and no efforts spared to make it a practical engine of pleasing design. It is provided with adjustments to take up wear and maintain alignment.

It will drive a small lathe or printing press, a dynamo for three or four lights, or five or six ceiling fans.

Includes all castings, with steam ports bored in the cylinder bored and faced, the steam chest seat and valve seat planed, and the slides dressed.

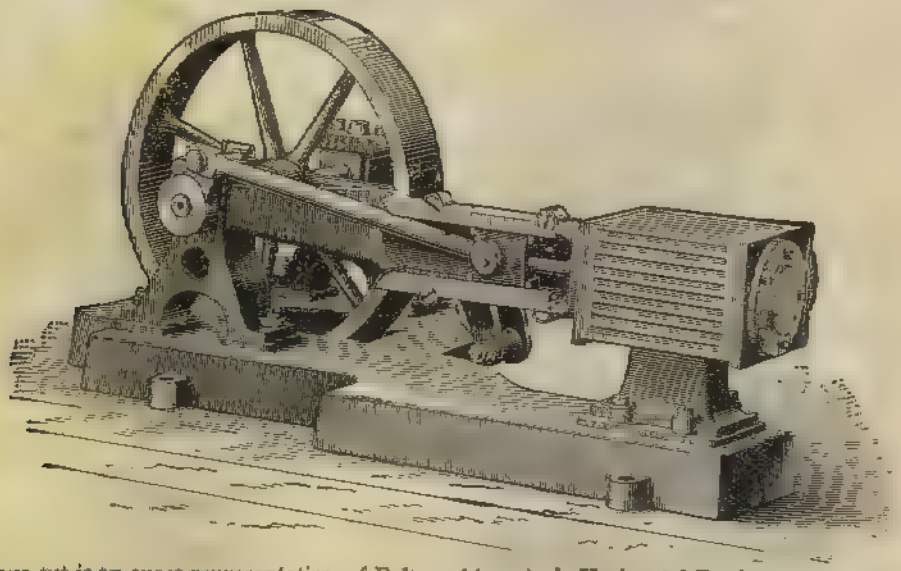
Also a full set of screws, steel for piston rod, valve stem and shaft, and a set of blue print drawings.

Dimensions.—Cylinder, 1¾ x 3 inches. Bed—length, 23½ inches; width, 13½ inches. Height to top of cylinder, 6½ inches; Fly Wheel, 10 inch diam. x 2 inch face.

Price of Set.....$12.00

Finished Engine.....50.00

FULTON CORLISS TYPE ENGINE.



The above cut is an exact representation of Fulton 1¼ x 2 inch Horizontal Engine.

It is a perfect working model engine, complete in all its parts, and made of the same materials as a large engine. All Steam Ports are cored in.

All Castings are made as near as practical to finished size, and this will be appreciated by the builder.

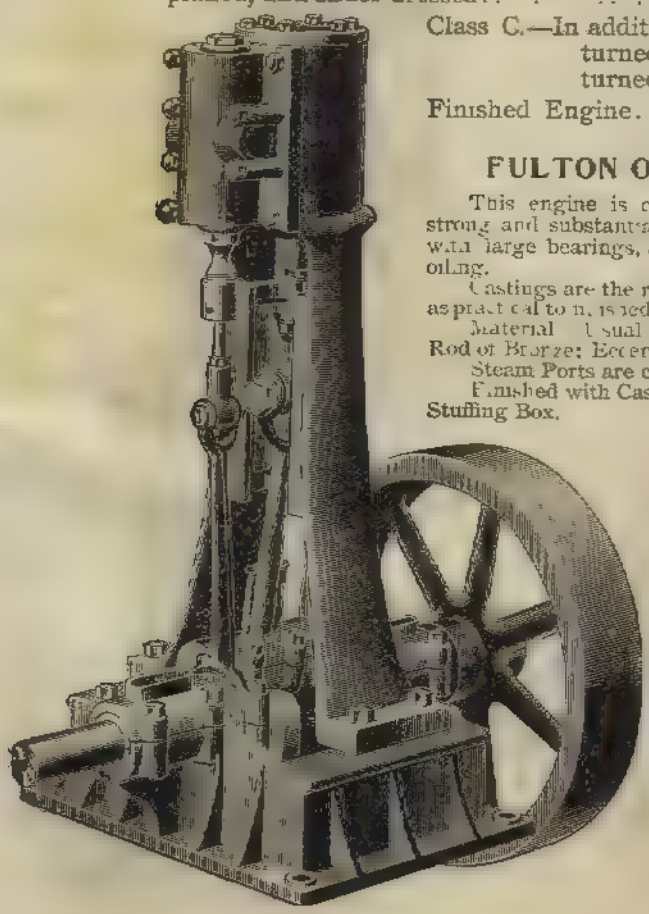
Dimensions are:—Cylinder, 1¼ x 2 inches; Bed, 12 inches long, 7 inches wide; Fly Wheel, 6 inches diam.

Class A.—Complete set of Castings, all ports cored in and steel for piston rod, valve, stem and shaft..... $3.75

Class B.—Has in addition, cylinder bored and faced, valve seat, and steam chest seat planed, and slides dressed..... 4.75

Class C.—In addition to class B, has fly wheel, bored, turned and polished eccentric bored and turned, and both stuffing boxes fitted on. 5.75

Finished Engine..... 20.00



FULTON ONE H. P. VERTICAL ENGINE.

This engine is carefully designed, being compact and light, yet strong and substantial. It is capable of heavy duty being provided with large bearings, adjustable for wear and excellent provision for oiling.

Castings are the result of long experience, and are worked as nearly as practical to finished size to aid the builder in finishing.

Material Usual parts of Iron, Crosshead of Bronze, Connecting Rod of Bronze; Eccentric Rod of Bronze Crank Shaft of Steel.

Steam Ports are cored in, and are very short, to economize steam.

Finished with Cast-Steel Rods and Bearing Pins and Glands in each Stuffing Box.

Weight Complete, 60 pounds.

Dimensions.—Size of Cylinder, 2 x 2¾ inches. Size of Base, 8 x 10 in. Height fron base to top of Cylinder, 20 inches. Fly Wheel, 10 x 2½ inch.

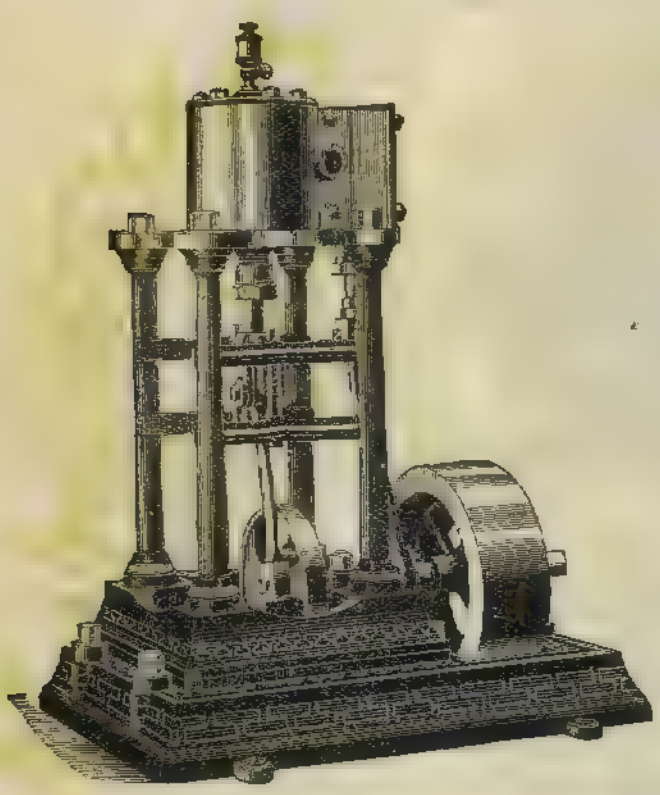
Castings, per set.....$12.00

With 12 in. Fly Wheel for Dynamo, 12 50

Cylinder and Guides bored, extra,.. 5.00

Finished Engine..... 60.00

NOTE.—The wrist pins are each sleeved with cast steel, this allows renewal without altering the alignment or adjustment.



VERTICAL ENGINE.

1¼ Bore x 1¼ Stroke.

PRICES:

Class A—is a complete set of Castings, in the rough... . $2.00

Class B—Is the above, with Cylinder Bored and Faced, and hole for piston rod put in..... 2.50

Finished Engine... . .... 15.00

FULTON 1-4 H. P. VERTICAL ENGINE.

A high speed Vertical Engine fully ¼ horse-power, which is sufficient for a small printing press, a dynamo, or 3 ceiling fans.

The Cylinder is 1½ inch bore and the piston 1⅝ inch stroke.

The Steam Ports are cored in and are proportioned for high speed.

The Crank Pins and Wrist Pins, where the greatest amount of wear comes, are large and easily oiled allowing high-speed and smooth running.

Anyone, with limited facilities, can fit up one of these engines from a half finished set and derive much practical and scientific instruction.

The Castings are the result of long experience, they are made as closely as practical, to finished size, greatly aiding the builder in finishing.

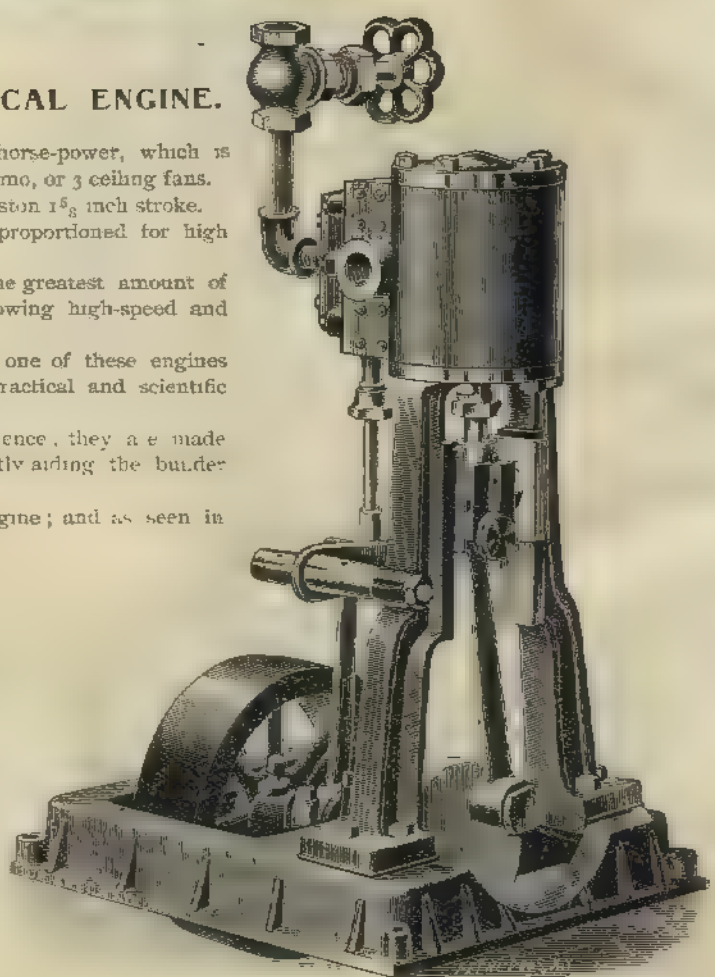
Special Screws are furnished with this engine; and as seen in the cut, add much to the finish

PRICES

Class A—Complete set, Castings in the rough, with screws, steel for rods and drawings. $5.00

Class B—The above with Cylinder Bored, Faced and Planed. All lathe and planer work done on uprights, eccentric and fly wheel turned, and both stuffing boxes fitted on. $8.00.

Finished Engine. $35.00



INTERNATIONAL SUPPLY DEPT. PUBLISHING CO.
Chicago Ill. TRADE MARK Philadelphia Pa.

MANICURE SCISSORS.

Each.

No. 20. Manicure Scissors. 4 inches long, full polished, steel . . . . . $ .18

POCKET SCISSORS.

No. 21. Pocket Scissors. 4 inches long, rounded points, full nickel plated and polished, fitted bows..... .18

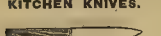
BUTTON HOLE SCISSORS.

No. 22. Button Hole Scissors with patent screw adjusted, 4 inches long, good quality steel..... .17

No. 23. Button Hole Scissors. Fine quality steel, nickel plated and polished... .28

No. 24. Button Hole Scissors. Extra quality steel, nickel plated, polished . .39

KITCHEN KNIVES.



Each.

No. 25. Kitchen Knife. Made of fine quality steel, with hardwood handle.$ .03

No. 26. Kitchen Knife. 6¼-inch blade, made of polished steel, tang going through handle, which is riveted on. A very handy knife 07

No. 27. "Famous" Vegetable Paer and Slicer. Stronger and more durable than any other knife of its kind. The blade is made of one piece, of the best steel, so shaped as to make two edges, one for paring and slicing, the other to cut fruit or vegetables or for coring apples, etc..... .05

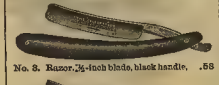
RAZORS.

A Fine Selection of Special Bargains, Guaranteed to be as Represented. Each in a case.

Each.

No. 1. Razor. Bone handle, ⅞-in. blade,$ .35

No. 2. Razor. George Westenholm celebrated pipe razor, shell handle, ⅞-inch blade..... .49



No. 3. Razor, ⅞-inch blade, black handle, .58

No. 4. Razor, ⅞-inch, hollow blade, double shoulder, etched, fully warranted, black handle. ..... .73

No. 5. Original Pipe Razor. George Westenholm & Son's make, ⅞-inch blade, .80

No. 6. Barbers' Rattler Razor. Heavy ⅞-inch blade, hollow ground, etched.... .95

No. 7. Razor. Antique ivory, celluloid handle, full polished and hollow point, ⅞-in. blade, etched..... 1.05

No. 8. Razor. Fluted white bone handle, full polished, full hollow, double concave etched blade, ⅞-inch... .. .... 1.18

RAZOR STROPS.

Each.

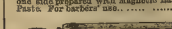
No. 9. Razor Strop. Four sides, standard make..... .. ..$ .09

EMERSON.

No. 10. Emerson Pattern Razor Strop. Two sides, one soft chamois..... .15

MAGNETIC.

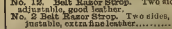
No. 11. Magnetic Horse Tail Razor Strop. 12 inches long, best horse hide, one side prepared with Magnetic Razor Paste. For barbers' use..... ..... .29



BELT PATTERN.

No. 12. Belt Razor Strop. Two sides, adjustable, good leather. .24

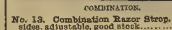
No. 2 Belt Razor Strop. Two sides, adjustable, extra fine leather..... .29



COMBINATION.

No. 13. Combination Razor Strop. 4 sides, adjustable, good stock..... .

No. 14. Combination Razor Strop. 4 sides, adjustable, extra fine stock..... .35



CHAMPION.

No. 15. Champion Razor Strop. Barbers' swing, 2 inches wide, 24 inches long over all, double strop, one leather and one canvas duck, with leather handle attached to metal swivel; in box .85

HAIR CLIPPERS.

MONITOR.

Each in a box. Each.

No. 16. Monitor Clipper. Made of extra fine steel, thoroughly tempered and finished in the highest possible degree in every particular, full nickel plated, weight, 12-oz $1.15

CHICAGO.

No. 17. Peerless Clipper. Best quality steel, cutters moving over two teeth, blued steel springs; nickel plated, same pattern as the Chicago..... 1.40

No. 18. Chicago Clipper. The barbers' favorite. This is a high grade article made of silver tempered steel, nickel plated, invisible spring. In every particular the finest clipper made..... 1.55

HORSE CLIPPERS.

No. 19. Acme Horse Clipper.

Made of fine steel, cutters moving over two teeth, ebonized wood handles; weight, 14 ounces....$ .98

"Money Saved is Money Earned," and you Save Money on Everything you buy Here.

. . . POCKET CUTLERY . . .

IMPORTED CUTLERY of the VERY BEST QUALITY at PRICES LESS than you are asked to pay for Inferior Goods. Don't pay Retailers' Prices when you can buy the BEST GOODS for so LITTLE MONEY. Illustrations Show Exact Patterns.

Each.

No. 1. One blade, staple Bario knife, bolster.....$ .06

No. 2. Extra large size, one blade, nickel handle, shield name plate, bolster ... .08

No. 3. Four blades, fancy nickel handle, .15

No. 4. Two blades, ebony and cocoa handles, shield name plate, bolster ..... .17

No. 5. Two blades, Bario knife, bolster.. .17

No. 6. Three blades, brass lined, double bolster, stag, white bone and ebony handles 18

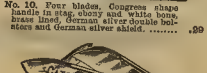
No. 7. Two blades, rosewood, ebony stag and white bone handles, large shield plate, bolster..... .20

No. 8. Two blades, brass lined, German silver shield, and English steel blade, one large clip and one small blade, rough and ready, stag, ebony and white bone handles..... .24

Each.

No. 9. Two blades, brass lined, German silver bolster, German silver shield, heavy American shape, stag, rosewood, ebony and white bone handles.....$ .26

No. 10. Four blades, Congress shape handle in stag, ebony and white bone, brass lined, German silver double bolsters and German silver shield. ..... .29

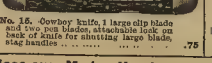


No. 11. Three blades, full polished cattle knife, brass lined, German silver bolster, ebony, stag and white bone handles..... .41

No. 12. Three blades, brass lined, German silver double bolsters and shield, etched on blade "Fully Warranted," stag and buffalo horn handles. ..... .46

No. 13. Two blades, large, heavy, flat jack, "Gladiator" etched on blade, brass lined, heavy double German silver bolsters and name plate, buffalo horn and stag handles.. .50

No. 14. Folding guard lock hunting knife, brass lined, finely polished steel bolsters, large clip blade, stag handle..... .73



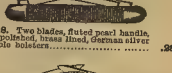
No. 15. Cowboy knife, 1 large clip blade and two pen blades, stockade lock on back of knife for shutting large blade, stag handles .. .. .75

LADIES' PEN KNIVES.

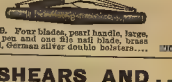
Each.

No. 16. Two blades, silvered aluminum fancy handle, lightest weight knife made$ .19

No. 17. Two blades, fancy pearl handle, large size ladies' knife, brass lined, German silver double bolsters .... .27



No. 18. Two blades, fluted pearl handle, full polished, brass lined, German silver double bolsters..... .28



No. 19. Four blades, pearl handle, large, two pen and one file nail blade, brass lined, German silver double bolsters.... .50

. . SHEARS AND . . SCISSORS.

WARRANTED STEEL SHEARS.

Warranted Steel Shears. Nickel plated and polished.

Each.

No. 20. Steel Shears, 6-inch.....$ .22
No. 21. Steel Shears, 7-inch..... .33
No. 22. Steel Shears, 8-inch ..... .99

SPECIAL SHEARS.

No. 23. Special Shears. Solid cast steel, nickel plated shears (put together with a brass nut and bolt), which is easily adjusted or taken apart for sharpening, 7-inch ..... .21
No. 24. 8-inch ..... .24
No. 25. 9-inch ..... .29

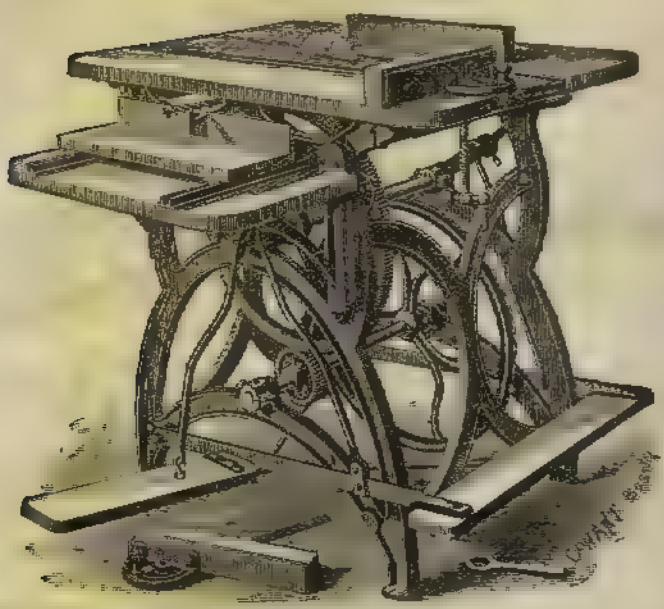
LADIES' SCISSORS.

No. 26. Ladies' Scissors. Heavily nickel plated and beautifully polished, 4 inches long, extra long fancy dagger blade. .... .24

The Best Cutlery and Lowest Prices ever Made. If to be sent by Mail add 4c. for Postage.

Hand and Foot Power Circular Saw,

With Attachment for Boring.



Frame made entirely of iron and of a design that gives it great strength and, with the amount of iron and the thorough manner of bolting together, makes it very rigid; and its weight is sufficient to make fastening to the floor while working unnecessary

The working parts consist of two shafts and the saw arbor. The centre shaft receives the power from the operator either by treadle or crank, and is applied direct by means of a 20-inch cut gear on that shaft which meshes into a 2-inch gun metal gear on the saw arbor and also with a 4¾ inch gear on the lower shaft, which also carries a lathe-turned balance wheel, 23 inches in diameter and weighing 40 lbs. By this means the balance wheel is given a speed four and one-half times greater than the crank or driving shaft, giving it sufficient momentum and power to carry the saw steadily through the work. At the same time the 20-inch gear, meshing into the 2-inch gear on the saw arbor, gives the saw a speed ten times greater than the driving-shaft.

The arbor is made of open hearth steel, ⅞ of an inch in diameter, with U. S. standard thread and case hardened nut on end where saws are used, which is turned to ¾ inch diameter, and has sufficient space between the collars to take in cutter heads up to one inch in thickness. A collar with set screw is also provided to prevent end motion.

All arbors have a ⅜ inch hole and set screw in opposite or outer end for holding bits, whether the machine is sold with or without a boring-table.

The boxes are all of genuine babbitt metal, made especially to our order, and will wear for years without needing rebabbitting.

The treadles are made of wrought iron, and the cranks have extension handles that can be adjusted to different length of stroke. The table is 28 inches wide by 37 inches long, and the entire height of machine is 30 inches.

The improved Iron Top on Circular Saw Machines, consists of a centre piece 10 inches wide running the whole length of the table and is bolted solidly to planed cleats on under side, and as it contains the grooves that the cutting off gauges slide in, and is the part subjected to the greatest wear, it must of necessity be and remain perfectly accurate and true.

This we know our improved Iron Top will do, as it is not affected by moisture, and will not warp or twist. The grooves for the two cutting-off gauges mentioned above, which are planed in this iron top, are on each side of the saw and are perfectly parallel and adjusted in line with the saw

The gauge tongues are of steel, rolled especially for us, and are accurately fitted The ripping-gauge slides in a planed iron groove on the right side of the saw. The balance of the table on each side of the iron top, is made of hard wood trued off level with same. The table is hinged at the back and can be raised by means of a hand wheel for grooving, rabbeting, etc.

Machines are made in two numbers, the only difference being in the weight of the balance wheels, No. 1 has a 40-lb. balance wheel; No. 2 has a 70-lb. balance wheel.

PRICES.

No. 1. Hand and Foot Power Circular Saw, without boring table, with two 7-inch saws, one each cross-cut and rip, set and filed, two cutting-off gauges, one ripping-gauge, one wrench, and two crank handles, balance wheel weighing 40 lbs., net weight of machine, 330 lbs. $60.00

No. 2. Hand and Foot Power Circular Saw, without boring table, with two 7-inch saws, one each cross-cut and rip, set and filed, two cutting-off gauges, one ripping-gauge, one wrench, and two crank-handles, 70-lb balance wheel, net weight of machine, 362 lbs. 65.00

Boring-Table and Side Treadle for either No. 1 or No. 2 machine, net weight, 40 lbs. . 7.00

PRICE-LIST OF POWER SAW BENCH.

Machine without boring-table, saws, or counter-shaft, net weight, 250 lbs. $40.00
Boring-table, net weight, 28 lbs. 5.00
Counter-shaft, net weight, 55 lbs 15 00
10-inch Saws, set and filed, each 3.00
12 " " " " " " 3 75
14 " " " " " " 4 50

PRICE-LIST OF EXTRA SAWS AND TOOLS.

For No. 1 and No. 2 Machines.

SAWS SET AND FILED.

6-in., ¾ hole, project 1⅝ in. above table	$1.50	12-in., ¾ hole, project 4⅝ in. above table	$3.75
7-in., " " 2⅛ " " "	1 75	6-in., " concave ground for mitering	2 00
8-in., " " 2⅝ " " "	2.00	8-in., " " " " "	2 50
9-in., " " 3⅛ " " "	2.50	10-in., " " " " "	3.50
10-in., " " 3⅝ " " "	3.00	12-in., " " " " "	4.50

MACHINE BITS, 5-in. LONG, ⅜-in. SHANK.

4-16..$0.45	5-16..$0 55	6-16..$0.60	7-16.$0 65	8-16..$0 75	9-16..$0.85	10-16. $0 95
11-16.. 1.05	12-16.. 1.15	13-16.. 1.25	14-16. 1.35	15-16.. 1.45	16-16.. 1.55	

Bits up to two inches in diameter can be furnished to order.

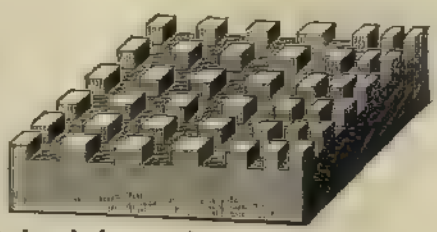
Huther Bros.' Improved Groover or Dado Head.

JOINTED AND FILED, READY FOR USE.

For cutting any width groove, from ⅛ to one inch. This groover consists of two outside saws, each of which is a groover in itself, and as many inside cutters as required. The inside cutters are made 1/16, ⅛, and ¼ inch thick, so that any width groove measurable in sixteenths may be cut. The outside cutters are made ⅛ inch in thickness. It will cut a perfect groove, either with or across the grain, and will not leave a rough edge, as is the case with ordinary groovers. Where a wider groove than ¼ inch is needed, inside cutters are used between the outside cutters. **It takes less than one-quarter the power required to run other groovers.**

This tool is recommended to any person in need of a perfect groover, dado, or gaining head.

PRICE OF GROOVERS, 5-in. DIAMETER, ¾ HOLE, FOR FOOT-POWER SAW MACHINE.



No. 1 Set, cutting grooves ⅛, ¼, and ⅜ $5.75
No. 2 " " " ⅛, ¼, 3/16, ½, 5/8 ..... 7.00
No. 3 " " " ⅛, ¼, 5/16, ⅜, 7/16, ½, 9/16, 5/8, 11/16 ..... 7.75
No. 4 Set, cutting grooves ⅛, ¼, 5/16, ⅜, 7/16, ½, 9/16, 5/8, 11/16, ¾, 13/16, ⅞, 15/16 ..... 9.00

Cutting from ⅛-in. up to 2-in. Easily adjusted and sharpened.

No discount from this list.
The Groovers are arranged in sets as follows:

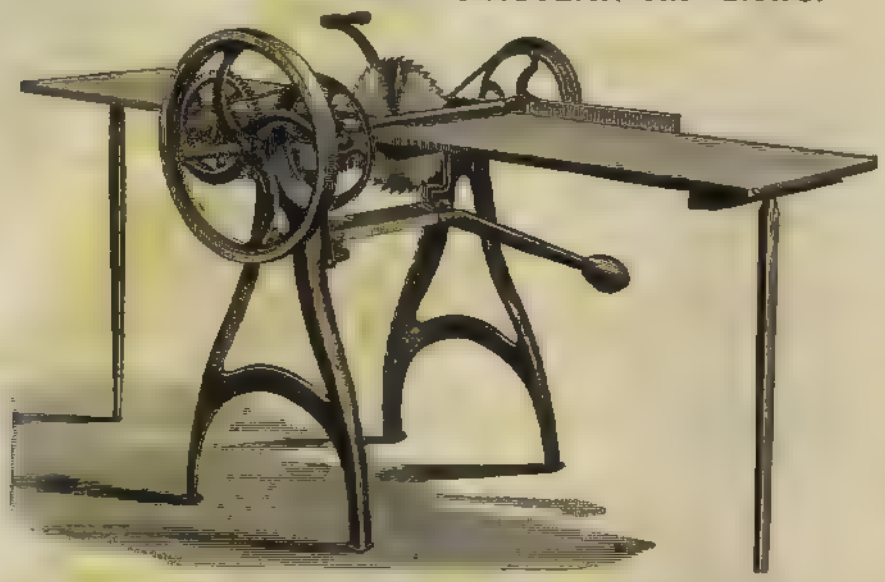
No. 1 Set, cutting grooves ⅛, ¼, ⅜.
No. 2 " " ⅛, ¼, 3/16, ½, 5/8.
No. 3 " " ⅛, ¼, 5/16, ⅜, 7/16, ½, 9/16, ⅝, 11/16, ¾.
No. 4 " " ⅛, ¼, 5/16, ⅜, 7/16, ½, 9/16, ⅝, 11/16, ¾, 13/16, ⅞, 15/16, 1.
No 5 " " ⅛, ¼, 5/16, ⅜, 7/16, ½, 9/16, ⅝, 11/16, ¾, 13/16, ⅞, 15/16, 1, 1 1/16, 1 1/8, 1 3/16, 1 1/4, 1 5/16, 1 3/8, 1 7/16, 1 1/2.
No 6 " " ⅛, ¼, 5/16, ⅜, 7/16, ½, 9/16, ⅝, 11/16, ¾, 13/16, ⅞, 15/16, 1, 1 1/16, 1 1/8, 1 3/16, 1 1/4, 1 5/16, 1 3/8, 1 7/16, 1 1/2, 1 9/16, 1 5/8, 1 11/16, 1 3/4, 1 13/16, 1 7/8, 1 15/16, 2.

PRICE-LIST OF GROOVERS.

	6 inches diam.	7 inches diam.	8 inches diam.	9 inches diam.	10 inches diam.	11 inches diam.	12 inches diam.
No. 1 Set	$5 80	$6 80	$7.60	$8.35	$9 15	$9.75	$10.85
No. 2 Set	7 05	8.15	9.05	9.90	10.80	11.60	12.95
No. 3 Set.....	8.65	9.85	10.85	11.90	13.00	13.90	15.45
No. 4 Set.....	9.90	11.20	12.30	13.45	14.65	15.75	17.55
No. 5 Set.....	12.40	13.90	15.20	16.55	17.95	19.45	21.75
No. 6 Set.....	14.90	16.60	18.10	19.65	21.25	23.15	25.95

In ordering please state the number of set, diameter of groover, and size of hole wanted.
Extra inside cutters can be had at any time

HAND CIRCULAR RIP SAWS.



This machine will rip boards or planks of either soft or hard wood, of any thickness up to 3¼, and of any width up to 19 inches. It is especially adapted to shops without steam or water power, and will, as nearly as possible, take the place of a steam rip-saw in quantity and quality of work. It requires little space, and is built mostly of steel and iron.

The lumber is placed between two feed rollers, which feed it to the saw. The feed can be made slow or fast, as the operator may desire, by the cone pulleys on feed rolls. These rollers are self-adjusting to thick, thin or uneven lumber. The saw can be instantly set to or from the gauge to any width desired. With this machine one man can do the work of three using the old hand saw. Unskilled operators can do the work rapidly and truly. Unlike the hand saw, the work is as true and square as that done by steam or water-power saws, and is as easily dressed with the plane.

Each..... $50.00

COMBINED CIRCULAR AND SCROLL SAWING MACHINES.

This machine combines a Circular and Scroll Saw, the Circular Saw being the machine proper, with the Scroll Saw as an attachment. We are therefore prepared to furnish the machine with or without the Scroll Saw as may be preferred. This combination is absolutely perfect, as neither the Circular nor the Scroll Saw interferes in the slightest degree with the successful operation of the other, and thus practically combining two machines in one, we are able to make the price considerably lower than would be possible were they distinct and separate machines.

Combined Circular and Scroll Saw and Boring Attachment, including 2 circular saws, 12 assorted scroll saws, the Boring Attachment with an "Old Reliable" self-centering drill chuck, all combined in one machine..... $50.00

Combined Circular and Scroll Saw, including 2 circular saws and 12 assorted scroll saws..... 40.00

Circular Saw alone, including 2 circular saws, 1 rip, and 1 cross-cut..... 35.00

Scroll Saw Attachment, inc. 12 assorted scroll saws ... 5.00

Boring Attachment, including "Old Reliable" self-centering drill chuck..... 10.00

Countershaft for steam power..... 10.00

Where the machine has been ordered, arranged as a circular saw only, the other attachments can be taken at any future time.

FOOT POWER FORMER.

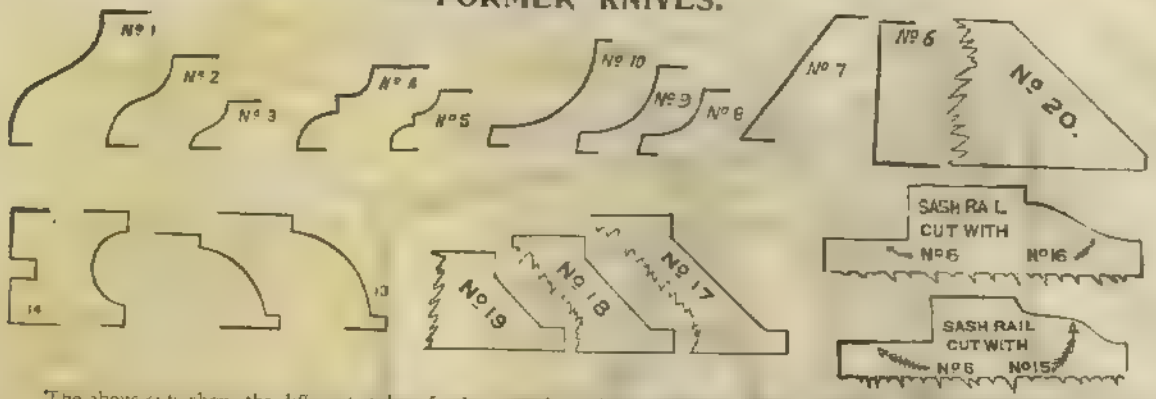
This cut represents a machine for moulding edges of brackets, scroll work, pane work, regular and irregular mouldings of all styles up to ⅜ inch. The speed of the knives is from two to twenty-five hundred per minute. By the aid of the Patent Vesicepece Fence the knives are at the will of the operator, caused to rotate in either direction that the grain of the wood may require, thus avoiding all complicated devices for reversing motion usually employed on single-spindle Formers. The great speed of the knives insures rapid and smooth work. Articles that look very plain can be made elegant and costly in appearance by the rapid and perfect work of this machine. It supplies a want long felt by every mechanic. The spindle and its bearings are of steel, with adjustments to take up the wear. The parts to set the machine for the use of different knives and work are convenient, and all substantial and durable. The table can be lowered to give 2¾ inches between it and the lower cutting edge of the knife.

Weight, complete, 80 pounds. Boxed, ready for shipment, 110 pounds.

Machine, without any Knives..... $20.00

(For description of Former Knives, see next page.)

FORMER KNIVES.



The above cuts show the different styles of edges which we have knives to make, by stating the number we will know which knife to send. Parties ordering the Former can select such as will best serve their purpose. They can be sent at any future time if not taken with the machine at first.

Each.....$1.00

NEW FORMER KNIVES.

These embrace forms not covered by our old set of Knives Nos. 1 to 20. The new Knives are made on a different principle from the old ones, and can be used separately or in combination. The possibilities of combination are almost endless and valuable as the Former has been heretofore, its usefulness is immensely increased by this new set of knives, which make the Former the most valuable single machine that a cabinet-maker or wood-worker can employ.

The above cut represents the elementary form of the knives, which as before stated, can be used singly or in combination, as may be required. All the different shapes are made in three sizes viz ⅛ ¼ and ½ inch, and but as less space than where knives are used in combination, they shall all be of the same size. This, however, is not imperative and users of the knives can of course have different sizes according to their fancy. In ordering these knives it will be well for customers to give the shape of knives required, designating same by letters as shown on cut, and also state size whether ⅛, ¼, or ½ as the case may be. These new knives supersede the old style Beading Knives, to which they are greatly superior in many ways. They require no hooks for hanging them as was the case with the old knives, they are reversible, whereas the old beading knives could be run in one direction only, and they have the great advantage of being used singly for centre bead work or in combination for any number of beads that may be desired.

Each.....$0.50

FLUTING ATTACHMENTS.

This cut represents an attachment to be used on the Former for fluting table legs, etc., as the leg in the cut shows. "A" shows the edge of the pattern, the shape of which regulates the cut on the leg lengthwise. The index plate is spaced to make several divisions of a circle, and is regulated by the snap latch at "B." "C" is a screw provided with which the leg is fastened in place. This attachment has all the adjustments necessary to work legs of usual length and up to 3 in. in diameter.

Each.....$3.00

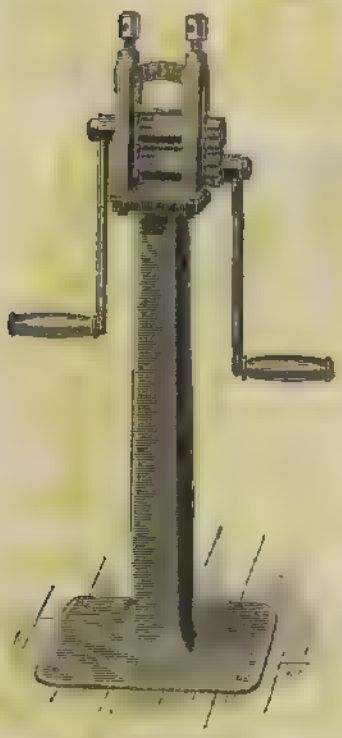
FOOT-POWER MORTISING MACHINES.

This machine combines all the features necessary for a perfect mortising machine. It has great range for work, power on the chisel, accuracy in its action, and has all the required adjustments, which are easily and quickly made. It has abundant strength, is durable and occupies but little space. All mechanics can but appreciate its operation. Each machine is warranted perfect in its operation and construction. Except the supplementary table, springs and treadle, the machine is made entirely of iron and steel. Weight, 130 lbs.; boxed ready for shipment, 170 lbs. We give a list of chisels on other page, and purchasers of machines can select such sizes as their work requires.

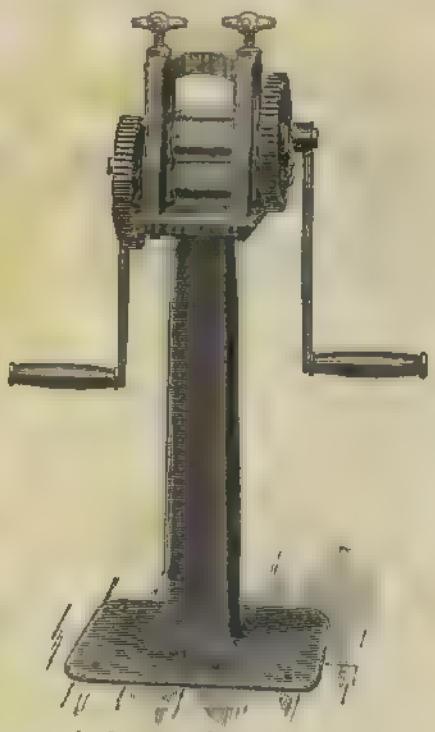
Without Chisels..... each, $22.00

PLAIN HAND MILLS.

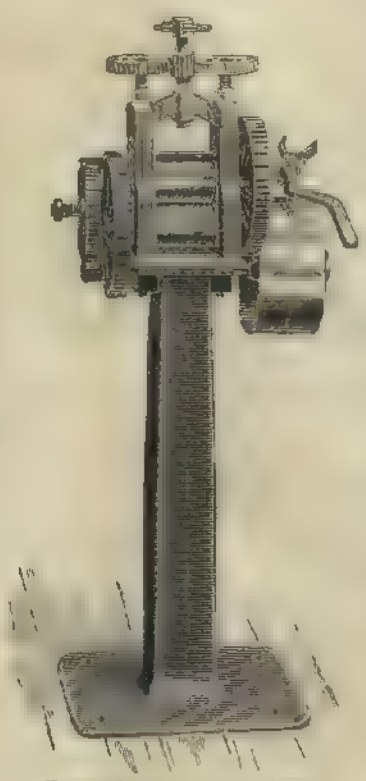
With Flat Rolls.



Hand, plain.



Hand, back geared.



Triple-Geared Power Mi

No. 1.	Size of rolls,	2	x 1½	inches,	weight, 80	pounds		$35.00
No. 2	" " "	2½	x 1⅞	"	" 100	"		4[illegible].00
No. 3.	" " "	3	x 2¼	"	" 145	"		5 .00
No. 4.	" " "	3½	x 2½	"	" 165	"		6[illegible].00
No. 5.	" " "	4	x 2¾	"	" 190	"		75.00

With Square Wire Rolls.

No. 1.	Size of rolls,	2	x 1½	inches,	weight, 80	pounds		$35.00
No. 2.	" " "	2½	x 1⅞	"	" 100	"		45.00
No. 3.	" " "	3	x 2¼	"	" 145	"		56 00
No. 4.	" " "	3½	x 2½	"	" 165	"		68 00
No. 5.	" " "	4	x 2¾	"	" 190	"		85.00

With One Flat and One Ring Roll.

No. 1.	Size of rolls,	2	x 1½	inches,	weight, 80	pounds		$32.50
No. 2.	" " "	2¼	x 1⅞	"	" 100	"		42.00
No. 3	" " "	3	x 2¼	"	" 145	"		53.00
No. 4	" " "	3½	x 2½	"	" 165	"		64.00
No. 5.	" " "	4	x 2¾	"	" 190	"		80.00

BACK-GEARED HAND MILLS.

With Flat Rolls.

No. 3.	Size of rolls,	3	x 2¼	inches,	weight, 180	pounds		$75.00
No. 4.	" " "	3½	x 2½	"	" 200	"		85 00
No. 5.	" " "	4	x 2¾	"	" 225	"		100.00

With Square Wire Rolls.

No. 3.	Size of rolls,	3	x 2¼	inches,	weight, 180	pounds		$81 00
No. 4.	" " "	3½	x 2½	"	" 200	"		93.00
No. 5.	" " "	4	x 2¾	"	" 225	"		110.00

With One Flat and One Ring Roll.

No. 3.	Size of rolls,	3	x 2¼	inches,	weight, 180	pounds		$78.00
No. 4.	" " "	3½	x 2½	"	" 200	"		89 00
No. 5.	" " "	4	x 2¾	"	" 225	"		105.00

TRIPLE-GEARED POWER MILL.

With Flat Rolls.

No. 3.	Size of rolls,	3	x 2¼	inches,	weight, 240	pounds		$125 00
No. 3½.	" " "	3½	x 2½	"	" 265	"		135 00
No. 4	" " "	4	x 2¾	"	" 290	"		150.00

Without pressure screws as in cut. $15.00 less.

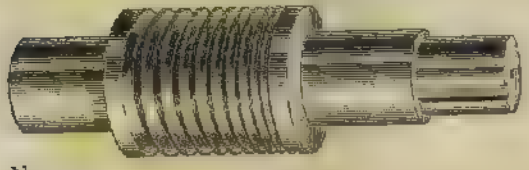
SINGLE HALF ROUND RING ROLLS.

To Fit either Plain or Back-Geared Hand Mills.

Nos	1	2	3	4	5
Size....inches,	2 x 1½	2½ x 1⅞	3 x 2¼	3½ x 2½	4 x 2¾
Each	$10.00	12.00	15.00	20.00	25.00

SQUARE WIRE ROLLS.

To Fit either Plain or Back-Geared Hand Mills.



To produce perfect wire, we would require the mill that the rolls are to be fitted to, so that we may closely fit them between the boxes.

Nos	1	2	3	4	5
Size....inches,	2 x 1½	2½ x 1⅞	3 x 2¼	3½ x 2½	4 x 2¾
Per pair	$20.00	24.00	30.00	40.00	50.00

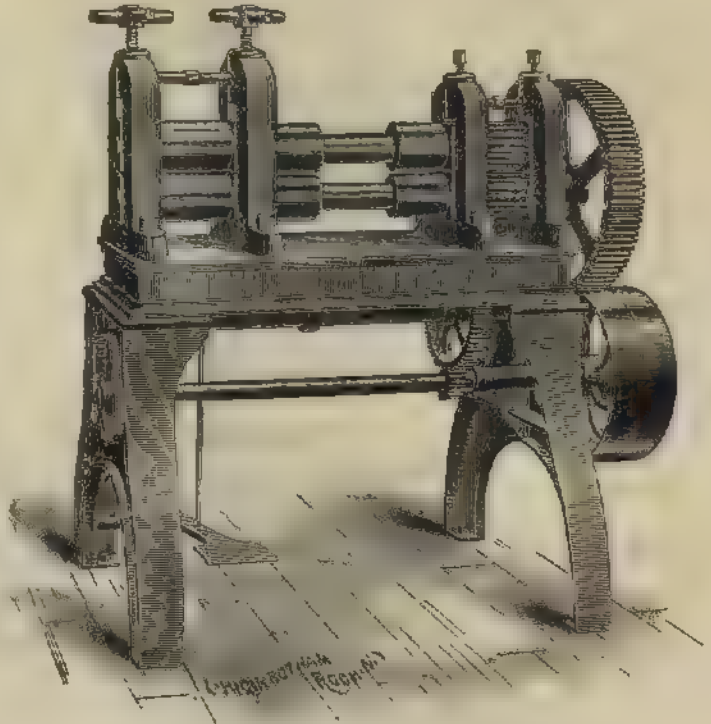
HEAVY POWER ROLLING MILLS.

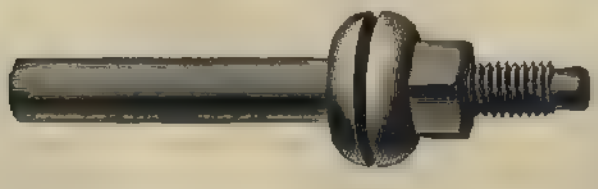
With Flat Rolls.

These rolls are tempered, ground, and highly polished, and are warranted in every respect. The gears are all cut, and care taken in fitting to insure ease in the working of the rolls. The pinions and toggles are of cast steel, boxes of bronze, pressure screws of steel.

Extra attention is given that the workmanship is first-class throughout, and we are fully confident as to its merits in placing it in competition with mills of other makes. These mills can be built with a belt shifter, to operate by hand instead of foot, if desired.

Nos	6	7
Size....inches,	4½ x 3	6 x 4
Weight....lbs.	550	1,000
Each	$225.00	400.00





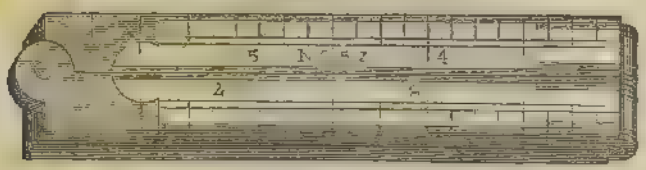
SAW OR EMERY WHEEL MANDRELS.

These arbors are intended for one size only, not having adjusting ferrules or recessed flanges.

Diameter	¼	5/16	⅜	½	⅝	¾	1 in.
Per dozen	$12.00	12.00	12.00	20.00	24.00	36.00	42.00
Each	.75	.75	.85	1.25	1.50	2.00	2.50

BOXWOOD RULES.

One Foot, Four Fold, Narrow.



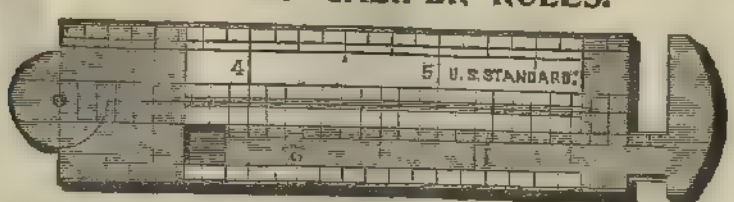
Stephens' Nos	Stanley's Nos		Per doz.	Each.
70	69	Round joint, middle plates, 8ths and 16ths ins., ⅝ inch wide	$3.00	$0.10
71	65	Square joint, " " " " " ⅝ "	3.50	.15
72	64	" " edge plates, " " " ⅝ "	5.00	.20
72½	65½	" " full bound, " " " ⅝ "	11.00	.40
73	55	Arch joint, middle plates, " " " ⅝ "	4.00	.15
74	56	" " edge plates, " " " ⅝ "	6.00	.25
75	57	" " full bound, " " " ⅝ "	12.00	.45

IVORY RULES.

One Foot, Four Fold.

Stephens' Nos.	Stanley's Nos.		Per doz.	Each.
89	90	Round joint, brass, middle plates, 8ths and 16ths of inches	$10.00	$0.50
90½	92½	Square joint, German silver, middle plates, 8ths and 16ths of inches, ⅝ inch wide	14.00	.70
91	92	Square joint, German silver, edge plates, 8ths and 16ths of in. ⅝ in wide	17 00	.85
91½	91	Square joint, German silver, edge plates, 8ths, 10ths, 12ths, and 16ths of inches, ¾ inch wide	23.00	1.15
—	91½	Square joint, German silver, full bound, 8ths, 10ths, 12ths and 16ths of inches, ⅝ inch wide	30.00	1.50
93	88½	Arch joint, German silver, edge plates, 8ths, 10ths, 12ths, and 16ths of inches, ¾ inch wide	21.00	1.00
94	88	Arch joint, German silver, full bound, 8ths, 10ths, 12ths, and 16ths of inches, ⅝ inch wide	32.00	1.60

BOXWOOD CALIPER RULES.



Stephens' Nos.	Stanley's Nos.		Per doz.	Each
95	36	Square joint, 6 in., 2 fold, 8ths, 10ths, 12ths, and 16ths. ⅜ in. wide	$7.00	$0.25
98	32	Arch joint, edge plates, 1 ft., 4 fold, 8ths, 10ths, 12ths, and 16ths ins., 1 inch wide	12.00	.45
—	32½	Arch joint, bound, 1 ft., 4 fold, 8ths, 10ths, 12ths, and 16ths, 1 in. wide,	20.00	.75

IVORY CALIPER RULES.

95½	38	Square joint, German silver mountings, 6 inches, 2 fold, 8ths, 10ths, 12ths and 16ths of inches, ⅜ inch wide	15.00	.75
98½	39	Square joint edge plates, German silver mountings, 1 foot, 4 fold, 8ths, 10ths, 12ths, and 16ths of inches, ⅝ inch wide	38.00	1.90
99½	40	Square joint, German silver, bound, 1 foot, 4 fold, 8ths and 16ths of inches, ⅝ inch wide	44.00	2.20

For Ourselves And Others

Our readers should watch this department for items of interest regarding the CLINIC, our advertisers, etc., etc.

The guaranteed average issue of the CLINIC is **over twenty thousand copies** per month. Affidavits, receipted bills, Post Office receipts, or any other proof of circulation cheerfully furnished. THE ALKALOIDAL CLINIC reaches the medical profession of every part of the United States and Canada, and is the very best advertising medium in the country.

ADVERTISING RATES

Amount of space.	1 Mo.	3 Mos.	6 Mos.	1 Yr.
One Page	$45 00	$120 00	$220 00	$400 00
One-half Page	25 00	69 00	120 00	220 00
One-quarter Page	15 00	40 00	69 00	120 00
One-eighth Page	9 00	22 00	40 00	69 00
One-sixteenth Page	5 00	12 00	22 00	40 00

(1 inch single column

The above prices are for unspecified position Special rates for special spaces. Five per cent discount for cash quarterly in advance. Reading notices in this department 60 cents per line, cash with order

NET RATE PER THOUSAND

Some advertisers prefer a rate per inch or per 1,000 circulation based upon the monthly Post Office receipt; these we will make on request. Say how much you want and for how long.

POINTS OF INTEREST TO THE ADVERTISER.

The CLINIC enjoys the distinction among periodical journals of having an ad rate in living proportion to circulation, and a circulation that pays the advertiser

> Our advertisement appears monthly in twenty-seven journals. None give the results the CLINIC does. From every state in the union have we received orders for baths from doctors who said they saw our advertisement in THE CLINIC, and also from South America.
> FRANK S. BETZ & Co., Chicago.

The CLINIC sends a photographic reproduction of Post Office receipt each month to every advertiser and guarantees over 240,000 for 97.

> We send you a check herewith for the amount of bill to date. We are pleased to say that our faith in THE ALKALOIDAL CLINIC has grown with each issue and our only regret is "we did not go in sooner.
> ANTIKAMNIA CHEMICAL CO., St. Louis Mo

The CLINIC is backed by abundant capital and indomitable energy, every sample copy is placed so as to give the best returns; and its regular subscribers are among the most progressive physicians of the land

> We are pleased to report that the CLINIC brings us in touch with valuable customers and we congratulate you on your list of subscribers thatseem to be all buyers. THEODORE METCALF CO., Boston

The circulation of the CLINIC is paid for at $1 00 per year, excepting such copies as are used for samples to solicit new subscribers, and these being conscientiously placed where results seem most probable are of full value to the advertiser leading him into rich new fields. *We want your business*

E. J. FARNUM, M. D.,

. . . SURGEON . . .

103 STATE ST., - - - CHICAGO.

Makes a specialty of diagnosis and treatment of all surgical cases. Operations or consultations in city or country Telegrams or letters promptly answered. Hospital facilities furnished.

Please mention THE ALKALOIDAL CLINIC when writing

IMPERIAL GRANUM.

A prominent Vermont physician writing to thank The Imperial Granum Company for copies of their famous Clinical record, adds the following convincing words as to the merits of their product as a food for children: "I can show a baby that has been reared on Imperial Granum—after trying numerous other foods until he was reduced to a mere skeleton—that is now as tough and strong a boy of fourteen months as can be found anywhere.

PHASELIN AS A DIGESTANT.

It has been proven that Phaselin is the most powerful and effective digestant of all the elements entering the organism, both animal and vegetal. Permanently relieves dyspepsia, flatulence, colic and other intestinal disorders. Converts all proteids into perfect blood plasma. Nourishes the cells of structure and supports the powers of function. Digests and converts into assimilable material all of the elements of the organism, and locally heals chronic and recent ulcers and restores the normal conditions of the skin. Write the Alta Pharmacal Co., St. Louis, Mo., for sample and literature.

Test Your Sight for **Astigmatism**

By [illegible] one eye [illegible] these lines [illegible] appear equally black to you when holding it from one to three feet distant from the eye, the difference in shade is caused by astigmatism, which is a defective vision and very frequently causes severe headaches. This trouble can be utterly removed by Glasses ground specially to correct this defect. We examine eyes free [illegible] Satisfaction guaranteed. We guarantee satisfaction and our success has been due to the merits of our work.

BORSCH

103 E. Adams St. Optician

Please mention THE ALKALOIDAL CLINIC when writing

Among The Books

It has been well and truly said that he is an educated man who knows where to find things in books. Money spent in good books is well invested.

SHALLER'S GUIDE TO ALKALOIDAL MEDICATION.

This book is the latest, and is composed of collected essays on the most important active principles, teaching their therapeutical action and practical application. Its aim is to teach, and it hits the mark. The book is published and for sale by the editor of this journal; price, $1.50 post-paid; with a subscription to the CLINIC for one year, $2.00. A dissatisfied purchaser may return it and we will refund the money.

BURGGRAEVE'S WORKS

Were the pioneers in this line, and, in point of fact, they have never been surpassed. They need no comment. One interested in alkaloidal medication is poor without them all. Carefully studied and followed they will do much to ground your faith in therapeutics, and will add largely to your success.

New Practical Guide—Paper, $1.10; cloth, $1.60.

Pamphlets—Each, 25 cents—Essentials of Dosimetric Pharmacy, Diathetic Maladies, Fever and its Dosimetric Treatment, Diseases of Women, Diseases of Children, Medicine Past and Future, Neuralgia and the Neuroseis, Dyspepsia and its Treatment.

Any of the above will be sent postpaid on receipt of price. Address the CLINIC.

CASTRO'S PRACTICE

Has been justly pronounced the most remarkable single treatise on the modern method of rational therapeutics which has thus far been given to the medical practitioner. It constitutes a complete, definite and thorough exposition of the proper methods of using the alkaloids and other active principles of medicinal plants.

Dr. Castro has kept prominently before him the immediate practical needs of the physician, and has presented, with the consideration of each disease, carefully tabulated statements of the treatment demanded by the malady in its dominant and variant forms. For sale by the CLINIC and the Abbott Alkaloidal Co. Price, $4.25, prepaid.

HYDROZONE

(30 volumes preserved aqueous solution of H_2O_2)

IS THE MOST POWERFUL ANTISEPTIC AND PUS DESTROYER.
HARMLESS STIMULANT TO HEALTHY GRANULATIONS.

GLYCOZONE

(C. P. Glycerine combined with Ozone)

IS THE MOST POWERFUL HEALING AGENT KNOWN.

THESE REMEDIES CURE ALL DISEASES CAUSED BY GERMS.

Successfully used in the treatment of Gastric and Intestinal Disorders (Chronic or Acute):

DYSPEPSIA, GASTRITIS, GASTRIC ULCER, HEART-BURN, CONSTIPATION, DIARRHŒA, Etc.

"Half an hour before meals, administer from 4 to 8 ozs of a mixture containing 2 per cent. of **Hydrozone** in water. Follow after eating with **Glycozone** in one or two teaspoonful doses well diluted in a wineglassful of water."

Send for free 240-page book "Treatment of Diseases caused by Germs." containing reprints of 120 scientific articles by leading contributors to medical literature.

Physicians remitting 50 cents will receive one complimentary sample of each, "Hydrozone" and "Glycozone" by express, charges prepaid.

PREPARED ONLY BY

Charles Marchand

Graduate of the "Ecole Centrale des Arts et Manufactures de Paris" (France).

Hydrozone is put up only in extra small, small, medium and large size bottles bearing a red label, white letters, gold and blue border with my signature.

Glycozone is put up only in 4-oz., 8-oz. and 16-oz. bottles bearing a yellow label, white and black letters, red and blue border with my signature.

Marchand's Eye Balsam cures all inflammatory and contagious diseases of the eyes.

Charles Marchand, 28 Prince St., New York.

Sold by leading Druggists. Avoid imitations. ☞ Mention this Publication.

INTERNATIONAL SUPPLY DEPT. PUBLISHING CO.
Chicago Ill. TRADE MARK Philadelphia Pa.

International High Grade Milk Wagon

MADE BY ONE OF THE LARGEST manufacturers of milk and delivery wagons, a concern that has the reputation for making only the highest grade work **A regular $150.00 Wagon,** but on our basis of one small profit added to the manufacturers' cost we furnish this wagon complete as illustrated for **$66.50,** if full amount of cash accompanies the order. The price when shipped **C. O. D. is $68.60.** We will ship by freight, C. O. D., subject to examination, providing $10 00 is sent with the order as a cash deposit. You examine it at the freight depot, and if found perfectly satisfactory and exactly as represented, pay our price, less the amount sent with the order, and the wagon is yours. Each and every wagon guaranteed against any defect in material or workmanship

Order by Number 1194.

We invite a critical comparison of our goods and prices.

Description

This Wagon is Built on Honor from the best of materials. It is the neatest, best made, cheapest up-to-date, low down and short turn milk peddler's wagon in existence. It is the same style wagon used in large cities.

BODY—Body is made from the best seasoned wood. is 6 feet 6 inches long, and 2 feet, 10 inches wide. The body is put together with twelve rods. It stands only 27 inches from the ground, and will turn around in a circle of 13 feet. Has hinge lazy back; imitation leather trimmings; sliding doors, with glass panels; swinging front transom, with glass panel; front sides glass panels, rear sides white enameled oiled duck.

PAINTING—It is painted in the very best manner; body, dark blue, green or antique brown, with gold striping; gear, carmine or wine on red, nicely striped.

It is packed knocked down, thus making low freight rates. Shipping weight, 600 pounds; capacity guaranteed, 800 pounds. We furnish this rig complete with shafts for

$66.50

Cash with order, $68 60 on our C. O. D. terms. Extra for pole with neck yoke and whiffle trees, complete, in place of shafts, for $3.00.

Heavier Wagons, same style, at a slight advance.

Save the discount by sending full amount of cash with order.

The International Low Down Spring Wagon

Workmanship and material guaranteed the best; well made and thoroughly ironed.

Description.

BODY—Body is made of best grade air seasoned timber; 6 feet, 6 inches long; 2 feet, 10 inches wide; ironed on top; drop end gate; hardwood bottom, iron and braced.

SEAT—High back, built on 13-inch risers, with two iron strap braces on each riser.

SPRINGS—Three elliptic oil-tempered springs, made from the best steel. Heavy rolling and durable.

GEAR—One-inch, double collar steel axles, square shaped, full circle fifth wheel; hickory axle caps cemented, clipped and bolted to axles.

WHEELS—Seven patent wheels, 1¼x5-16; oval edge steel tire full bolted between each spoke.

TRIMMINGS—Leather seat cushion.

PAINTING—It is painted in a first-class manner; body, dark blue; gear, dark wine colored with gold striping.

Weight when crated, for all parcel post at 450 pounds has guaranteed capacity of 900 pounds.

Pole in place of shafts, add $2.50 extra.

11 feet long for two seat bodies, add $1.25 extra.

Can furnish this wagon with 1¼-inch axle, body, 3 feet, 2 inch wide, with heavier springs and wheels, guaranteed capacity 1,200 pounds, for $5.00 extra.

Be sure and state width of track in sending in your order. If you omit this, it will delay shipment

No. 192.

PRICE IF CASH IN FULL IS SENT WITH THE ORDER $36.50

WHEN SENT C. O. D., $37.95.

Wool Lap Robes at extremely low prices. We sell them from factory to consumer, the short cut that pleases consumers.

OUR BINDING GUARANTEE MAKES YOU ENTIRELY SAFE.

INTERNATIONAL SUPPLY DEPT. PUBLISHING CO.
Chicago Ill. TRADE MARK Philadelphia Pa.

FARM WAGONS.

Our Line of Farm Wagons Embraces the Products of Several of the Best Factories in the Country

BEFORE MAKING OUR CONTRACT for the season of 1907 we looked over the product of the different factories of the country [illegible] SECURED THE BEST [illegible] in making arrangements with several of the largest concerns in the [illegible] wagons, and in this way we are able to offer you a line of wagons [illegible] quality of the wagons. There are many ways in which a farm wagon can be cheapened, and there are many wagons on the market that have been cheapened in every possible way to reduce the selling price to the minimum and yet afford the smallest percentage of profit to the manufacturer, wholesaler and retailer.

A POOR WAGON IS DEAR AT ANY PRICE. Whether you buy a farm wagon should [illegible] you [illegible] for every [illegible] you [illegible] wagon. And carrying out our views of what is necessary in the way of a farm wagon to give perfect satisfaction to a customer and [illegible] we have spared no expense in the [illegible] of the best selected material in every piece and part going into the construction of our wagons, and the manufacturers employ all possible means to construct a wa on which is as good as it is possible to produce, and on this class of goods we invite competition and a close comparison of our prices with those of any other concern in existence.

WE WOULD NOT HAVE OUR WAGONS compared with the [illegible] with [illegible] and you will find our prices even lower than the poorest grade of work offered by others. Our one small profit plan direct from manufacturer to consumer gives you everything worth [illegible] but on this basis we allowance for the multiplicity of [illegible] which enters into the regular way of doing [illegible] though small [illegible] we offer you the most complete line of farm wagons at prices equally [illegible] we have no competitor. A binding guarantee accompanies each wagon, by the terms of which, should any breakage occur in any part of the wagon, the result of defective material or workmanship, within one year and we are supplied [illegible] within thirty days we will furnish duplicate of the [illegible] parts without charge.

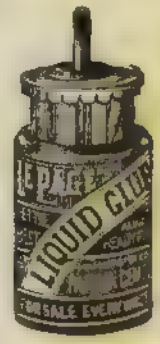
TERMS AND CONDITIONS OF SHIPMENT.

TO POINTS WITHIN 500 MILES OF THE FACTORY we will ship any wagon listed in this [illegible] by freight, subject to your [illegible] on receipt of $10.00. You can examine the wagon at the freight depot, and if found perfectly satisfactory and exactly as represented pay the freight agent our price and freight charges, less the $10.00 sent with order. **We ship our wagons direct from the factory,** you thus [illegible] of [illegible] and [illegible] We [illegible] and [illegible] to patrons. [illegible] each [illegible] we state where the wagon is made, and it will always be shipped direct from the factory. The prices quoted are for the wagons delivered on board the cars at the factory. If you live 500 miles or less from the factory we will ship C. O. D., as above explained. If a greater distance, cash in full must accompany your order.

ABOUT THE FREIGHT. One farm wagon weighs from 800 pounds upwards. The average weight of wagons complete with double box is 1,000 pounds, and even if a wagon weighs more than 1,000 pounds we can generally get them accepted by railroad companies at 1,000 pounds' [illegible] [illegible] [illegible]

LIQUID GLUE.

Family Glue.



	Gross.	Dozen	Each.
Small bottles	$12 00	1.15	.10
Large "	18 00	1.75	.15

One dozen in a box, half gross in a case.

New Style Patent Tin Cans, Adjustable Brush.

¼ gills packed in dozens, 6 dozen in case, per doz... $1.50
Gills, " " " " " 2.00
½ pints, packed 2 dozen in a case,..... " 3.00

Wide-Mouth Cans without Brush, for Mechanics.

½ pints, packed 2 dozen in case	per doz.,	$3.00	Each, $0.25
Pints, " 1 " "	"	5.00	" .42
Quarts, " 1 " "	"	8.50	" .71
½ gallons, " 2 " "	"	13.50	" 1.13
Gallons, " ½ " "	"	24.00	" 2.00

This liquid glue is always ready for use, is very strong, and will even glue iron and wood together. Do not mix water with it, but if it becomes too thick in cold weather place the can in warm water.

THE FULTON IMPROVED KEROSENE GLUE POT.

With Tin Chimney.

Heats quicker than any other glue pot in the market. It will not smoke or smut nor emit any unpleasant odors.

Cabinet-makers, Upholsterers, Carpenters and Manufacturers will find this glue pot a great convenience. It is also handy to have around a shop for gluing or cementing leather belts.

Nos	0	1	2	3
Pints	1	1½	2	3
Price, each	$1.00	$1.25	$1.50	$1.75

IRON GLUE POTS.

Tinned Inside.

Nos	000	00	0	1	2	3	4	5	6
Pints	½	¾	1	1½	2	3	4	5	6
Per doz	$5.00	5.50	6.00	6.75	8.40	10.26	12.42	14 58	16.94
Each	.40	.45	.50	.60	.70	.85	1.00	1.25	1.40

GLUE BRUSHES.

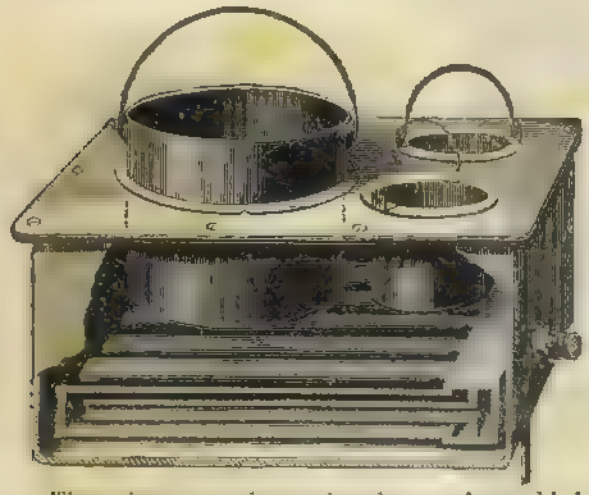
With Iron Handles.

Nos	1	2	3	4	5	6
Per doz	$5.00	6.25	7.50	8.75	10.50	12.50

GLUE.

Carpenters or Cabinet	per lb.,	$0.25	Buffalo Hide	per lb.,	$0.30
Paper Box	"	.12	Best Frozen	"	.25
Kalsomine	"	.20	Granulated	"	.25

Special quotations in quantity.



STEAM HEATER.

For Glue, Paste, Etc.

As shown in cut, the heater consists of a cast-iron box with cover, in which there are holes of suitable size to receive such pots as may be desired.

The heating surface consists of horizontal tubes screwed into a header, each of which has a smaller tube within it through which the steam enters, and a positive circulation—even under low pressure—is insured.

Exhaust steam being frequently used for heating purposes, the tubular form of the heating surface gives abundant heating area, and its efficiency is so greatly increased thereby that as good results are reached as if high pressure steam were connected to the heater.

Three sizes are made, numbered 1, 2 and 3 and below will be found a list of the regular sizes and number of pots which are commonly made for each heater.

Extra pots of the several sizes and materials are kept in stock and can be furnished as wanted.

Nos	1	2	3
Sizes of Covers, inches	11 x 15½	16 x 22½	16 x 28¼
Depth, inches	7	9	9
Sizes and Nos. of Pots fitted up for each size	Two 5 in. only, or, One 8 in. only, or, One 9 in.	Six 5 in. only, or, One 10 in. and Two 5 in.	Two 12 in. only, or, One 12 in. and Four 5 in. or, Eight 5 in.
Price, without pots	$8.00	16.00	20.00

COPPER POTS FOR GLUE HEATERS

Diameter, inches	5	8	9	10	12
Depth, inches	5	7	7½	8	8
Price	$2.00	3.50	4.00	4.50	5.50

Galvanized Cast-Iron Pots, 5 inch, 75 cents each.

WATER COOLERS.

Galvanized Iron Lined.

Size,	1½ gal.	2 gal.	3 gal.	4 gal.	6 gal.	8 gal.
Price, each	$1.55	2.00	2.35	2.80	3.40	4.15

Porcelain Lined.

Size,	2 gal.	3 gal.	4 gal.	6 gal.	8 gal.
Price, each	$5.90	6.70	7.65	9.40	11.20

Hotel or Depot Sizes.

Galvanized Iron Lined, with One Faucet.

Size	8 gal.	10 gal.	12 gal.
Price, each	$10.25	11.80	17.65

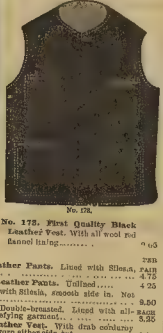
Galvanized Iron Lined, with Two Faucets.

Size,	8 gal.	10 gal.	12 gal.
Price, each	$12.35	15.30	20.00

Leather Clothing.

We are pleased to call your attention to our line of leather clothing. They are better this year than ever. These goods are absolutely impervious to wind or rain. The demand is for *First* quality leather clothing. Our first quality coats are so marked. Do not expect to get the same quality leather in second quality as first. The seconds are good value, but we do not guarantee them. All leather garments are measured from edge to edge, we do not allow for lapse. They run from 36 to 48 in size; do not fail to order them large enough, as a 48 coats no more than a 36. Our coats measure exactly as they are tagged.

No. 180.



No. 173.

No. 173. First Quality Black Leather Vest. With all wool red flannel lining..... 6 65

No. 180. First Quality Black Leather Pants. Lined with Silesia, PAIR Will wear like iron..... 4.75

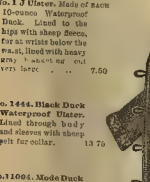
No. 182. Second Quality Black Leather Pants. Unlined..... 4 25

No. 197. Calf Skin Pants. Lined with Silesia, smooth side in. Not reversible..... 9.50

No. 170. Russet Leather Vest. Double-breasted, lined with all- EACH wool red flannel. A splendid cold defying garment..... 5.35

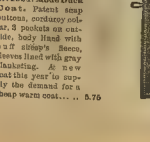
No. 171. First Quality Black Leather Vest. With drab corduroy lining, made reversible and can be worn either side out..... 8.25

No. 196. Calf Skin Vests. Made reversible, without lining, plain surface on one side, extra dressed on the other. Pockets on both sides. Very dressy, durable and waterproof..... 5.75



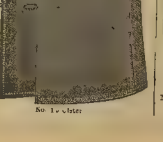
No. 1 J Ulster.

No. 1 J Ulster. Made of EACH 10-ounce Waterproof Duck. Lined to the thighs with sheep fleece, fur at wrists below the wrist, lined with heavy grey [illegible] and very large..... 7.50



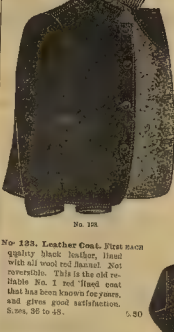
No. 1444.

No. 1444. Black Duck Waterproof Ulster. Lined through body and sleeves with sheep pelt fur collar. 13 75



No. 11004.

No. 11004. Mode Duck Coat. Patent snap buttons, corduroy collar, 2 pockets on outside, body lined with buff sheep's fleece, sleeves lined with gray blanketing. A new coat this year to supply the demand for a cheap warm coat..... 5.75

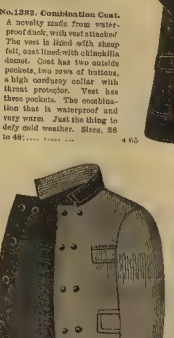


No. 128.

No. 128. Leather Coat. EACH Made of suede tanned black leather with corduroy collar. Lined with 12 oz. ticking blanketing. Single-breasted buttons and buttonholes, not guaranteed. What we mean by that is that the leather does not run even, being thinner in some places than others. It is made to sell for a cheap coat. Sizes, 36 to 48 3.75

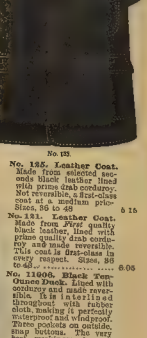
No. 133. Leather Coat. Made from selected second quality black leather. Lined with union red flannel. Not reversible. Two rows of buttons and made to represent a double-breasted coat, corduroy collar. Sizes, 36 to 48..... 4.65

No. 123. Leather Coat. EACH quality black leather, lined with all wool red flannel. Not reversible. This is the old reliable No. 1 red lined coat that has been known for years, and gives good satisfaction. Sizes, 36 to 48. 5 30



No. 1333.

No. 1333. Combination Coat. A novelty made from waterproof duck, with vest attached. The vest is lined with sheep fell, coat lined with chinchilla dorset. Coat has two outside pockets, two rows of buttons, a high corduroy collar with throat protector. Vest has three pockets. The combination that is waterproof and very warm. Just the thing to defy cold weather. Sizes, 36 to 48..... 4 65



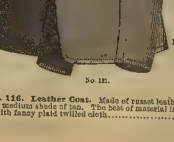
No. 123.

No. 125. Leather Coat. Made from selected seconds black leather lined with prime drab corduroy. Not reversible, a first-class coat at a medium price. Sizes, 36 to 48 5 15

No. 121. Leather Coat. Made from *First* quality black leather, lined with prime quality drab corduroy and made reversible. This coat is first-class in every respect. Sizes, 36 to 48..... 6 05

No. 11006. Black Ten Ounce Duck. Lined with corduroy and made reversible. It is interlined throughout with rubber cloth, making it perfectly waterproof and wind proof. Three pockets on outside, snap buttons. The very best workingman's coat ever brought out. It is cheap, but very serviceable in every way. Don't fail to include it in your order 4.25

No. 165. Waterproof Duck Coat. Rainproof, five pockets on outside, straps on sleeves, large game pockets inside. The cheapest game coat made, quality considered. Sizes, 42 to 48..... 2.62



No. 121.

No. 116. Leather Coat. Made of russet leather in a medium shade of tan. The best of material is used in these coats. Lined with fancy plaid twilled cloth..... Is very tough, and of 5.10

INTERNATIONAL SUPPLY DEPT. PUBLISHING CO.
Chicago Ill. Philadelphia Pa.

Mackintoshes and Rain Coats

OUR LINE OF MACKINTOSHES embraces the best the market affords, and at prices that cannot be equaled by any other house

Men's Cape Mackintoshes

Sizes 36 to 46 inches Chest Measure. Average Length 52 inches.

No. 5492 This is a very cheap coat, well made from *black diagonal* goods. We offer it simply to meet competition, but do not recommend it..... $1.50

No 5494 **Men's Mackintosh,** outside made of fine *black diagonal*, inside plaid lined, made with full length detachable cape, double felled seams, at our special price..... 1.98

No. 5475. **Men's Mackintosh,** outside of *black Albert twill*, the inside plaid check lined, velvet collar, double felled seams, detachable cape. This is a desirable garment for any climate and is a suitable coat to wear in place of an overcoat. It is made up in the latest style and a garment that will give excellent satisfaction..... 3.00

No. 5486. **Men's Mackintosh,** made from fine *blue or black wool cashmere*, with black and white plaid lining and a velvet collar double felled seams, detachable cape One of the very latest styles of the season. Mention color wanted in sending in your order..... 3.95

No. 5479. **Men's Mackintosh,** made from fine *imported wool tricot cloth*, with large detachable cape, double felled seams, handsome plaid lining made up in the latest style, neatly finished colors *black, blue or navy*, at our special price..... 4.00

No 5481. **Men's Mackintosh,** made from fine all *wool heavy imported habit cloth*, is double texture, extra finish, with large detachable cape and wide velvet collar. All seams are sewed, strapped and cemented. It is tailored in a strictly first-class manner and is a perfect fitting garment, at..... 5.00

Men's Double Breasted Box Coats

No. 5491. **Men's Box Coat,** made from *tan covert*, with a fancy plaid lining and a wide velvet collar to match. This is an excellent value for the money..... $2.75

No. 5414. **Men's Box Coat,** made from an *all wool tricot*. The inside lined with a handsome plaid lining, wide velvet collar, all seams sewed, strapped and cemented in the best possible manner and a special value. Comes in *blue or black*..... 4.00

Men's Cape Mackintosh.

No 5484. **Men's Box Coat,** outside made from *extra quality of dark tan covert*, the inside beautifully plaid lined, finished with wide velvet collar, all seams are sewed, strapped and cemented, pockets tapped. This coat is double texture and equal to anything you could buy in your local market for double our price..... 4.50

No. 5468. **Men's Box Coat,** the outside of *black all wool habit cloth*, double texture goods, inside has a handsome dark plaid lining to match, wide velvet collar seams sewed, strapped and cemented in the best possible manner, made up in latest style and guaranteed in every respect, at..... 5.75

No. 5474. **Men's Box Coat,** outside made from *extra heavy all wool imported tan covert* cloth, inside woven plaid lining. The seams are all sewed strapped and cemented, with wide velvet collar, and is a neat, dressy coat. Retails in the regular way at $10.00 to $12.00. Our special price..... 7.50

Men's Box Coat.

Rubber Surface Coats

No 5404. **Men's Dull Finish Officer's Sheeting Coat,** medium weight, rubber surface coat of best material and make..... $1.98

No 5405. **Men's Dull Finish Officer's Drill Coat,** heavy weight, rubber surface, made from best material in a first-class manner, at..... 2.50

No. 5406 **Men's Dull Finish Mountaineer Coat.** This coat is 56 inches long, a suitable coat for riding or driving purposes where extra protection is needed; it is extra good quality, is well made of the best material and has the ball and socket patent buttons..... 13.15

Boys' Single Cape Coats

Sizes from 24 to 34 inches Chest Measure. Lengths to correspond.

No. 5401. **Boys' Cape Coat,** outside made *fine black diagonal serge* cloth, neat plaid lining, double texture, with large detachable cape, at..... $1.75

No 5402. **Boys' Cape Coat,** outside made from *brown pin check goods*, inside handsome plaid lining to match, has a velvet collar. This is a new style just brought out this season and will give excellent satisfaction..... 2.75

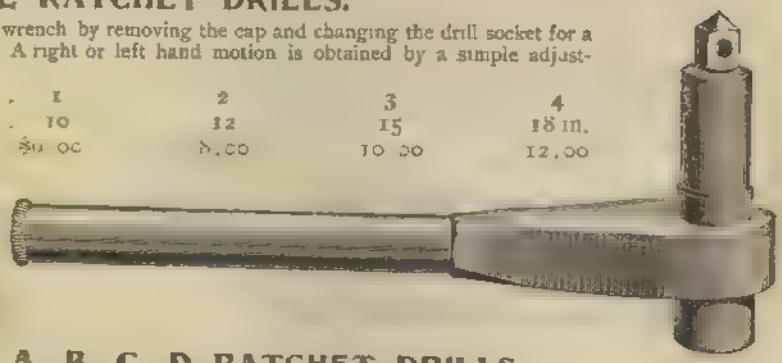
No 5403 **Boys' Cape Coat,** outside made from *fine blue serge*, inside neat check lining, large velvet collar This garment is well made and finished and is a special bargain at..... 2.95

Special discount of 3 per cent when cash in full accompanies the order

LOWELL RATCHET DRILLS.

This Drill may be converted into a wrench by removing the cap and changing the drill socket for a wrench gear of corresponding number. A right or left hand motion is obtained by a simple adjustment at the end of the handle.

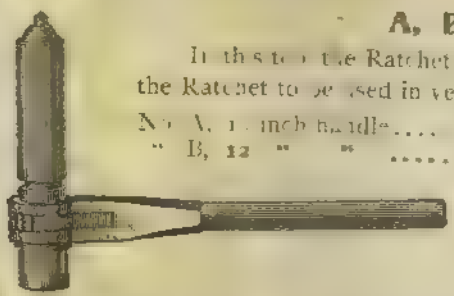
Nos.	1	2	3	4
Handle	10	12	15	18 in.
Each	$6 00	8.00	10 00	12.00



Boiler Ratchets.

Nos.	1	2	3
Handle	10	12	15 in.
Each	$6.00	8.00	10.00

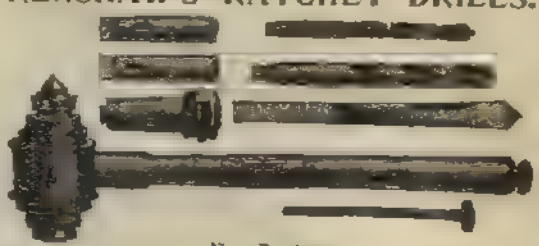
A, B, C, D RATCHET DRILLS.



In this tool the Ratchet wheel is small as compared with that in similar tools, allowing the Ratchet to be used in very close places. It is warranted in every part and particular.

No. A, 10 inch handle.....each, $7.00 | No. C, 15 inch handle.....each, $11.00
" B, 12 " " ..... " 9.00 | " D, 18 " " ..... " 14.00

RENSHAW'S RATCHET DRILLS.



No. 3 Ratch

The handle is drop-forged of tough wrought iron. The spindle of steel has substantial ratchet teeth cut, into which pawl engaging with a stud forged in the handle, which covers both pawl and ratchet, and protects them from dirt. The feed-screw is of steel, and hollow, giving the Drill large capacity in small compass. By transferring the collet and feed-screw, as arranged for right-hand drilling, to opposite ends of the spindle, the ratchet may be used for left-hand drilling.

No. 1 has one collet for Drills with shank ⅛ inch square at shoulder, and one collet for Drills, fitting No. 1 Morse's Standard Taper Socket. Discount for either collet, if not wanted, $1 00. Weight, 1 pound each.

Weight, 16 ounces. $11.00

No. 3 has one collet, No. 5 for drills with shank ¼ inch square at shoulder of ⅛ to 1 ½ inches diameter, which are the extreme sizes that this ratchet is adapted to carry; and collets Nos. 1, 2 and 3, for Morse's Standard Taper Shanks. No. 5 and No. 5 collets are held in the sprocket by screw-thread. No. 1 and No. 2 collets are tapered externally, to fit No. 3 socket. Deductions will be made for collets when not wanted as follows: No. 1, weight 8 ounces, and No. 2, weight 6 ounces, $ 1 each. Nos. 3 and 5 weight 8 ounces, $1 25 each.

With 4 Collets, weight, 8 lbs. 14 ozs. $15.00

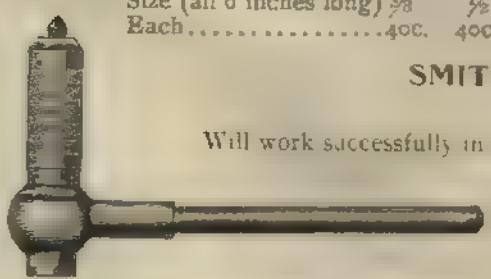
The No. 3 ratchet for use of boiler makers, for whose use it is especially adapted, is provided with an extended feed-screw, having a knurled shank 3½ inches long, by which the ratchet may be freely used in starting the drill, and fed by hand as desired. When the extended screw is substituted for the regular one the piece is not exchanged, but is taken as an extra attachment, and is furnished at $0 50. An adjustable friction feed attachment can be furnished for $.

	No. 1.	No. 3.
Length of handles over all.	9½ in.	18 in.
" from top of spindle to bottom of feed collet.....	3 "	5 "
" of feed.....	1½ "	2¾ "

FLAT DRILLS.

For Packer Ratchets.

Size (all 6 inches long)	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½ in.
Each.....	40c.	40c.	40c.	45c.	45c.	45c.	50c.	55c.	60c.	65c



SMITH'S FRICTION DRILLS.

No Lost Motion.

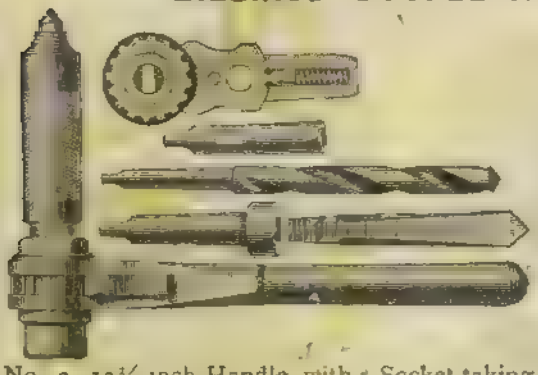
Will work successfully in places so contracted that a Ratchet is entirely useless.

No. 1.	10 inch Handle.....			$10 00
" 2.	12 "	"	"	..... 12.00
" 3.	15 "	"	"	..... 15.00
" 5.	20 "	"	"	..... 23.00

BOILER DRILLS.

No. 1.	10 inch Handle.....		$9 00
" 2.	12 "	"	..... 10 50
" 3.	15 "	"	..... 13 50
Wrenches for Nos. 1 and 2.....			each, 15

BILLINGS' DOUBLE ACTING RATCHET DRILLS.

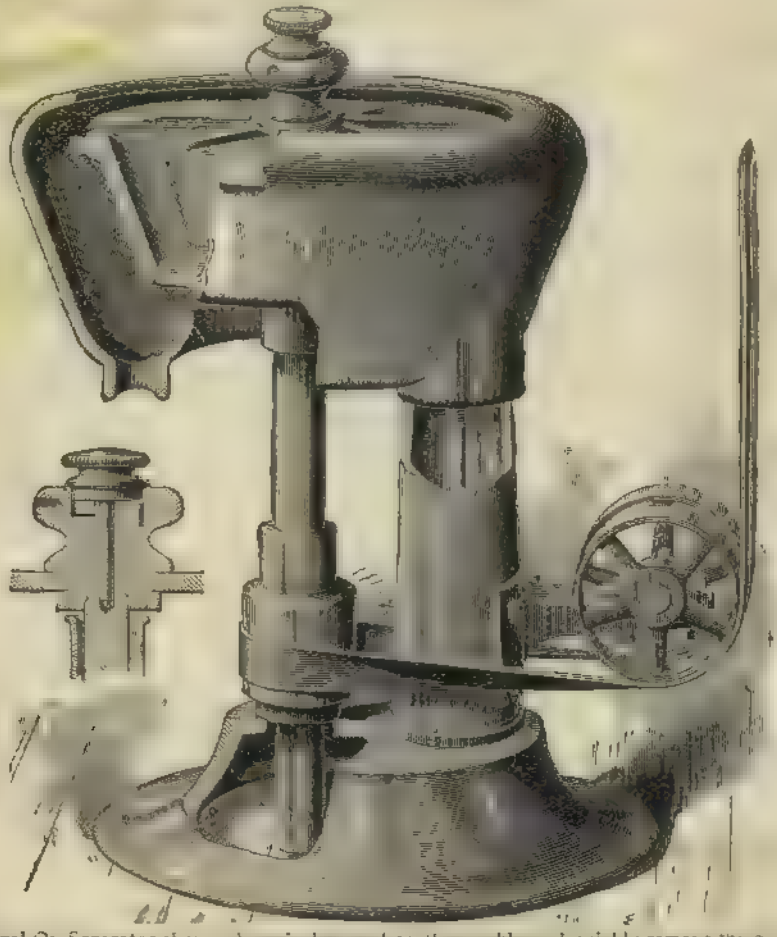


Drop-forged of the best bar Iron and Steel for the purpose, and are made to use Morse Taper Shank Twist Drills; also provided with Socket, with square hole for Square Shank Drills. This Drill can be changed from right hand to left hand drilling, by simply moving the pawl to the right or left. The Sockets furnished with the Drill can be utilized in any drilling spindle that may be fitted to receive them.

	Each.
No. 1. 10¾ inch Handle, with 1 Socket taking Morse Taper Shank Drills, from ¼ to ⅝ inch inclusive, and one Socket taking Flat Drills	$14.00
No. 1. Without the 2 Sockets above	11.00
No. 2. 13¾ inch Handle, with 1 Socket taking Morse Taper Shank Drills, from ⅝ to 1¼ inch inclusive, and 1 Socket for Flat Drills	17.00
No. 2. Without the 2 Sockets as above	14.00
Socket No. 1. For Taper Shank Drills, from ¾ to 1⅛ inclusive	1.25
" 2. For Taper Shank Drills, from ⅝ to 1⅛ inclusive	1.25
" 3. For Flat Drills, for No. 1 Ratchet	1.75
" 4. For Flat Drills, for No. 2 Ratchet	1.75

Socket No. 1 is fitted with Taper Shank to slide into No. 2 Socket, and purchasers procuring the No. 2 Ratchet with the 3 Sockets, can use the whole list of drills.

OIL SEPARATORS.

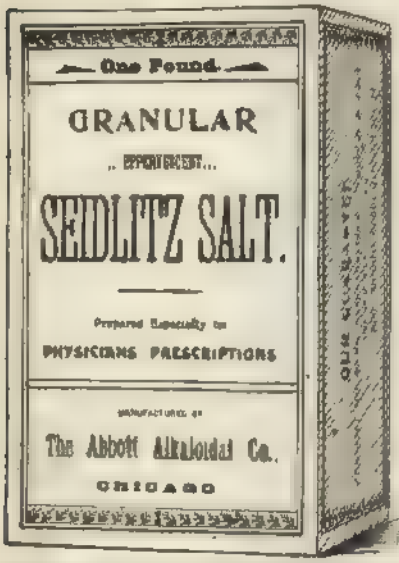


The Centrifugal Oil Separator shown above is designed to thoroughly and quickly remove the oil from metal turnings formed in the manufacture of bolts and screws, and from small articles such as screws, bolts and rivets, which in their manufacture are coated with oil. The Oil Separator is about thirty inches high, requires a floor space twenty inches square, is adapted to run at a speed of about two thousand revolutions per minute, is noiseless in operation, and produces no dirt. Spindle pulley, 5 inches diameter, tight and loose pulleys on counter, 6 inches diameter, 3 inch face; driving pulley on counter, 16 inches diameter, 3 inch face.

Each, including countershaft..... $175.00

SEIDLITZ SALT

Granular Effervescent Magnesium Sulphate, 84 per cent.



Desiring to discuss the merits of the above preparation with the readers of the Clinic for the purpose of securing a more general recognition of its merits through daily use, we will send a one-fourth pound sample to those not familiar with it, on request.

This with the understanding that it shall be used and results reported.

Seidlitz Salt is a pleasant and efficient laxative, antacid and refrigerant. As a laxative it tonifies rather than weakens. As an antacid its effects are agreeable and curative. As a refrigerant and blood purifier it is unexcelled. No one remedy rationally meets more conditions that attend indigestion and malassimilation.

In taste it is agreeable, being made from purified, dehydrated magnesium sulphate in effervescent combination. There have been many attempts to get this old stand-by, epsom salts, into an agreeable and efficient form but chemists have hitherto been unable to incorporate sufficient to make their products therapeutically of value.

We have succeeded

and we offer you in our "Seidlitz Salt" a preparation that has no successful rival.

. . . Price List . . .

At Our Expense For Delivery.		At Purchaser's Expense.	
1 lb in tin,	$1.00; per doz., $10 50	80c., per doz.	$9 00
½ " " "	.35; " " 3 75	30c.; " "	3 00
1 " " glass,	1.15; " " 12 00	85c.; " "	9.50
6 oz. bottle,	.35; " " 3 75	30c.; " "	3.00
" "	....., three doz., 10.00,	...three doz.	8.50

We shall be pleased to receive your orders.

THE ABBOTT ALKALOIDAL CO.,

Station X. CHICAGO.

Standard Products

OF OUR LABORATORY

*

Metcalf's Coca Wine

is made from the fresh leaves; a fine, selected wine only being used. It is a pleasant tonic and invigorator. Literature pertaining to its utility, by William Oliver Moore, M.D. reprinted from the *New York Medical Record*, and by other medical men, will be mailed on application.

Vinum Fraxini Americanae (Wine of American Ash)

Since its introduction to the medical profession by Dr. Charles P. Turner, of Philadelphia, as an internal remedy in the treatment of uterine diseases, has enjoyed a wide reputation in this class of cases, many clinicians having reported in many medical journals of its great utility.

Pure Vegetable Gluten

This is a desirable and well attested addition to the physician's armamentarium. Dr. John A. Jefferies in the *Boston Medical and Surgical Journal*, Vol. CXX, No. 4, recommends the following formula for making Gluten bread; Gluten flour, one cup; baking powder, one teaspoonful (or its equivalent of bi-carbonate of soda and cream of tartar); salt to taste: two eggs; milk or hot water, one cup. Mix with a spoon.

Antacidine Lime Water Tablets

Are a convenient method of instantly preparing lime water, producing an accurate solution in water. Always of a definite strength, ever ready, easily dissolved and transported.

All of these preparations are of the highest order that pharmaceutical and chemical skill can produce, an evidence of which fact is shown by the large patronage they have received at the hands of the medical profession.

Alkaloidal Granules

It should be of interest to our patrons that we have secured the New England Agency for the well known preparations of the Abbott Alkaloidal Co. of Chicago, and shall be pleased to receive your orders. Price list and descriptive literature will be sent on application. For samples address the home office.

THEODORE METCALF CO.

BOSTON ..... MASS.

BRAZING FORGE.

This forge is specially designed for brazing bicycle frames and parts. The blower is of the most approved method of getting the greatest amount of heat with the least consumption of gas. They are adjustable and direct the flame to any desired to the point required. Valves control the supply of both gas and air. The air tank under the table receives the air from the blower and distributes it to the blow pipes, a safety valve gives uniform pressure.

Complete with two No. 8 F Blow Pipes as shown in cut .. $42.00

Power Blower Extra 20.00

IMPERIAL HOT BLAST.

Simple, Durable, Unequalled for general uses.

Price $5.00

BRAZERS.

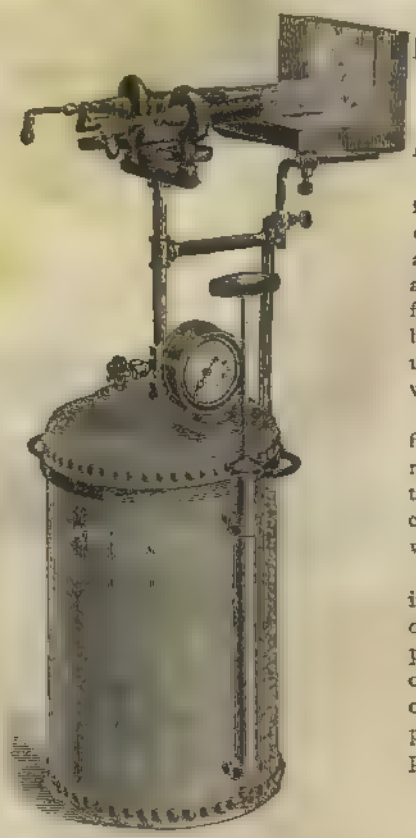
For Brazing and Tempering. Giving a very powerful blast.

Each $7.50

COMBINATION HOT BLAST

Combined Brazer, Soldering-Iron Heater and Blow Torch. New and powerful generator; will not blow out.

Price $7.50



MAMMOTH HOT BLAST BRAZER.

A very Powerful Machine.

Produces two solid blue flames 1½ inches in diameter of such intense heat as cannot be obtained from any other simular tool or from Gas, Coal etc. Can be charged in a few minutes, and burns *24 hours* with one pumping.

Has an adjustable muffler or hood which can be raised and turned or extended horizontally to accommodate all kinds of work.

Has a heavy galvanized iron tank of 10 gallons capacity made to stand 100 pounds pressure with cut off valve on top to permit of cleaning the discharge pipes without loss of oil or pressure.

Price.... $35.00

"SILENT FRIEND" HOT BLAST FURNACE.

PRICES.

With Tinner's Top..... $5.00
With Two Round Tops. 5.00
Complete with 3 Tops.. 5.50

"SILENT FRIEND" is the latest improved Furnace. It has no coil to clog or collect scale. It has wind guard. The tops are instantly interchangeable. It is light, durable, efficient, convenient and cheap.

"MATCHLESS" BLOW PIPE.

For Dentists, Jewelers and all workers in fine soldering.

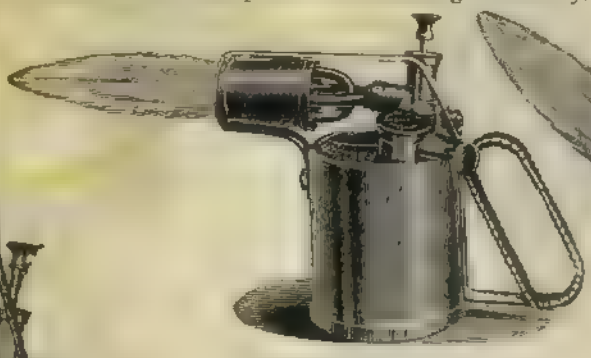
This is a compound Air and Gas Self-Lighting Blow Pipe, provided with a patent nozzle *C* and also with a patent spring valve *B*, having a movable adjusting nut *A*, by which more or less gas is made to pass through the pipe. It is also provided with a bugle so that it can be hung up when not required for constant use. The spring valve *B* can be adjusted to all sizes, very small flame to remain lighted so as to be in readiness, without re-lighting with a match, for use at any time. The patent nozzle *C* is capable of producing the most delicate needle pointed flame that can possibly be produced. These features make this Blow Pipe the *most convenient and quickest working Blow Pipe ever invented.* Three feet of air pipe and a mouth piece are also furnished for convenience when power air blast is not at hand. *Nickel-plated and Polished.*

Price..... $2.50

KEROSENE BLOW LAMPS OR TORCHES.

These Lamps are warranted to work with any kind of kerosene oil. They are safe, cheap, and convenient to handle, and are tested in three atmospheres before leaving the factory.

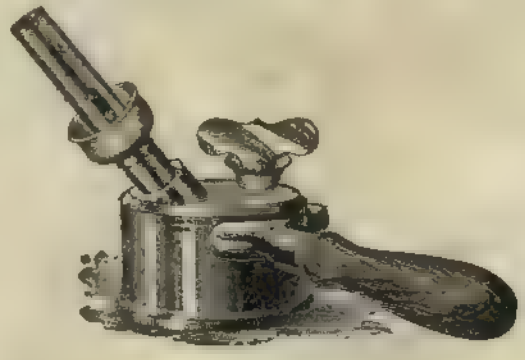
PRIMUS Torch No. 42. **No. 43.**
Capacity of Tank, 1 pint. 1 quart.
Price, $4.50. $6.00.



PRIMUS Torch No. 44.
Capacity of Tank, 1 pint.
Price, $4.50.

No. 45.
Capacity of Tank, 1 quart.
Price, $6.00.

PRIMUS Torch No. 40. **No. 41.**
Capacity of Tank, 1 pint. 1 quart
Price, $4.50. $6.00



THE VULCAN TORCH.

This Torch burns Naphtha or Gasoline, and at a cost of less than one cent will generate over 2,000 degrees of heat, and maintain a steady blast of One Hour or more.

ABSOLUTELY SAFE.—A valuable tool to burn off paint and for lighter class of Bicycle work.

Price ..... $3.50 Each.

WELLINGTON'S TORCHES.

This cut represents a powerful torch, which is used as a paint burner and for thawing out water pipes, etc. When lighting lamps, hold the flame of torch on the burner, then open stop-cock a full turn and the burner will light.

Each..... $6.00.

limate, etc., and ought to be, I think, in every physician's medicine case. It has no caustic properties, but is certainly the "Fritz" amongst the germ killers.

Hyde Park Sanatorium.

A limited number of morphine and other cases received into Dr. Waugh's residence, where they receive his personal attention

W. L. GILBERT, Manager.

William F. Waugh, M. D., limited to consultations and surgery.

Visits made to any part of the country when summoned by the attending physician

103 State St, Chicago.

FOR EXCHANGE.

Doctor, I have a first-class microscope with 3-4 and 1-5 objectives, new, that I will exchange for standard medical works. Write, with stamp, to

Gilbert, Ind. DR. C. S. MOODY.

MARSHALL'S CONVERTIBLE BUGGY CASE

OUR CUT 5.
NO 32 BOTTLE.

No. 32, changes into Saddle Bag (it is both in one). Finest, best durable leather finish outside and in lined). Contains 14 1 2 oz bottles 18 6-dr. cork S. [illegible] with spaces between rows for powder, [illegible] pantry spaces [illegible] [illegible] [illegible]

TO TAKE SALTS.

Put a tablespoonful in a teacup and add two or three tablespoonfuls of *boiling* water, stir well, decant and reject the residuum. Add a little lemon juice, let the mixture cool and give to the patient. If in the country beyond the reach of lemons, vinegar will make a fourth-rate substitute for the lemon juice. Repeat the dose every four hours until the bowels respond. The quantity of water may be varied to suit the caprice of the patient.

—*Parcells, M. and S. Rep.*

THE DOCTOR'S AUTOMATIC DRIVING LAMP.

Address Dr. S. L. Reefy, Edinburg, Ill., U. S. A.

BETTER THAN EVER.

A lamp that will not blow out in a storm. It can be hung inside of a closed buggy top where it will reflect a good light and not be in the way.

Please mention THE ALKALOIDAL CLINIC when writing.

BETTER TURN BACK

And take another look at the Betz page adv. in this issue. The baths and the people are to be depended upon every time. The CLINIC knows 'em well.

TUBULAR DRIVING LAMP

IT is the only perfect one.
IT throws all the light straight ahead from 300 to 500 feet
IT looks like a locomotive headlight
IT gives a clear, white light
IT will not blow nor jar out
IT burns kerosene

Special Offer

CUT THIS ADVERTISEMENT OUT

and send it to us and we will send book describing our lamp and will agree to send you one of our lamps or a pair at our wholesale price (very much less than the retail price) This offer will appear only once in THE ALKALOIDAL CLINIC.

Established 1868. R. E. DIETZ COMPANY, 60 Laight St., New York

Please mention THE ALKALOIDAL CLINIC when writing.

A GOOD LOCATION.

Any party knowing of a good location for a physician in the West, write C. M. C. care of the CLINIC.

MAILED FREE TO PHYSICIANS

A reprint of how I treat respiratory diseases, with antiseptics, viz: Catarrh, La Grippe, Throat Bronchial Asthma and Lung Diseases. Germicide medicines can be carried to parts affected. Over 1,200 patients treated and more than 90 per cent. of them, successfully Address

R. C. COTTINGHAM, M. D.,
313 Reed Street,
MOBERLY, MO

Please mention THE ALKALOIDAL CLINIC when writing.

RESINOL IN PRURITUS.

Dr. William Casperi, Mitchellsburg, Ky., writing to the Resinol Chemical Co., Baltimore, Md., says:

Pruritus vulva and ani, as well as itching piles, in my practice of twenty-eight years were considered terrors to physicians as as well as patients

Since resinol has made its appearance they have lost their terror, and to it belongs the blue ribbon. Three cases of the first, two of the second and one of the third

LINNAEAN HOSPITAL.

Private institution for

Surgical . . . .
Obstetrical and Gynecological Cases . . . . .

No fever cases admitted

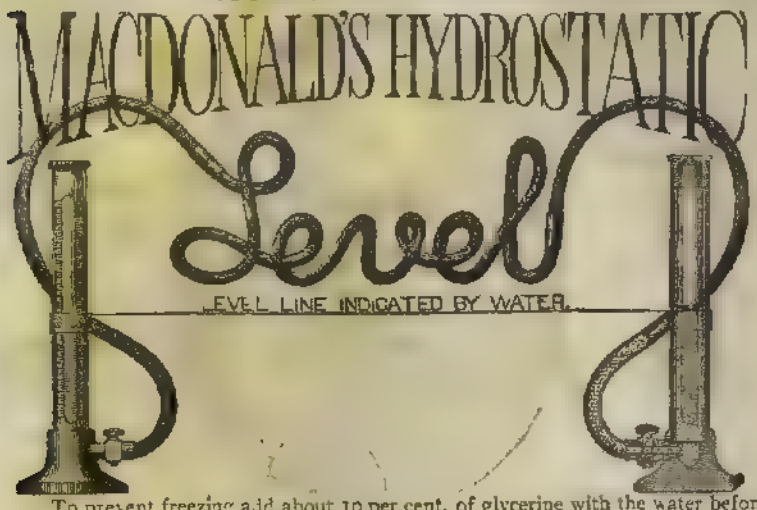
233 La Salle Av.,
Near Chicago Av.

DR SVEN WINDROW.
Superintendent.

Tel. N. 522.

ailment yielded very readily to the use of resinol, to my own and patients' astonishment, after other remedies had been used in vain for some time. With it I also cured two cases of scrotal eczema that were exceedingly obstinate under other treatment. Lastly I used it on scabies (five cases in one family) and all were sound and well in a very short time, after two other physicians had tried in vain for some time before. I am adverse to the recommendation business, but must give praises in this instance, as it has given me much better results than solutions of carbolic acid, corrossi or sub-

MACDONALD PATENT HYDROSTATIC LEVELS.



In lining up shafting, finding levels at long distances, over obstructions or around corners, more can be accomplished in one hour with this instrument than can be done in a day with an ordinary spirit level. It not only tells that points are out of level, but shows, in inches and fractions of an inch, how much they are out of level. Any workman can use it. Accurate for all distances.

How To Use It. When leveling two points a gauge is placed on each, the stop-cocks are opened, and when the water comes to rest, closed again, thus confining it to the exact height indicated. The instrument may then be picked up and carried to the light, if necessary, and the exact position of the water located on the scales. Any length of hose desired may be used between the gauges and accurate levels taken over any distance that the hose will permit.

To prevent freezing add about 10 per cent. of glycerine with the water before filling the level.

There is no annoyance from overflow or loss of the liquid in using. If the stop cocks should be left open, little float-valves located in the cups close the vent holes automatically when the water rises to the top of the gauges.

No. 1 is suitable for leveling on machinery, shafting, etc., and shows a variation from level line of 3½ inches and can be used with 25 feet of hose.

No. 2 is the same as above, except larger, showing a variation of 6 inches, and can be used with 100 feet of hose.

These levels are each put up in a hardwood box, which is included in prices given below.

No. 1, including 12 feet rubber tube laid upon spiral brass wire, one coupling and case.....$10.00
Extra tubing.....per foot, .12
No. 2, including 25 feet of tube, one coupling and case..... 15.00
Extra tubing.....per foot, .15

HAND-Y PLUMB AND LEVEL.

This level can be used in a horizontal position, or can be brought to perpendicular for ascertaining a plumb, with remarkable ease, as the shallow grooves along the two sides afford an excellent grip on the tool.

No. 16. Adjustable Hand-y Plumb and Level, Cherry, Arch Top Plate, Two Side Views, Polished, Tipped, Assorted, 24 to 30 inches.....each, $1.25

DUPLEX PLUMB AND LEVEL.

These levels have the ordinary form of leveling glass, set in the top surface of the stock. For any uses where an observation of the glass, sideways, may be found convenient, an additional leveling glass is set in the side, at the opposite end from the plumb. Both glasses are protected by brass discs, can be seen from either side, and are inserted in the level with the least possible removal of wood from the stock.

No. 25 Adjustable Plumb and Level, Mahogany, Arch Top Plate, Improved Duplex Side Views, Polished, Tipped, Assorted, 24 to 30 inches.....each, $2.00
No. 30. Adjustable Plumb and Level, Cherry, Arch Top Plate, Improved Duplex Side Views, Polished, Tipped, Assorted, 24 to 30 inches.....each, 1.50
No. 50 Adjustable Plumb and Level, Cherry, Triple Stock, Arch Top Plate, Improved Duplex Side Views, Polished, Tipped, Assorted, 24 to 30 inches.....each, 2.00

BRASS PATTERN LETTERS AND FIGURES.

Full Size Illustrations of Leading Styles.

Size,	1/8,	3/16,	1/4,	5/16,	3/8,	1/2,	5/8,	3/4,	1,	1½
Price,	4c.	4c.	4c.	4c.	5c.	5c.	6c.	7c.	9c.	10c.

Flattened Face and Hair Line Gothic same prices.

½ in. Roman. ½ in. Sharp Gothic. ½ in. Flat Gothic.

Directions for Sweating Brass Letters to Iron Patterns.

Tin the space where the letters are to go on the patterns, and also tin the back of the letters. Then place the letters where they are designed to go and place the soldering iron on the face of the letter, without any solder on the point, and the heat from the iron will cement the two tinned surfaces together. A blow pipe may be used for the latter purpose if prefered. A coat of Shellac Varnish over the lettering will give a smooth surface, allowing them to draw freely from the sand.

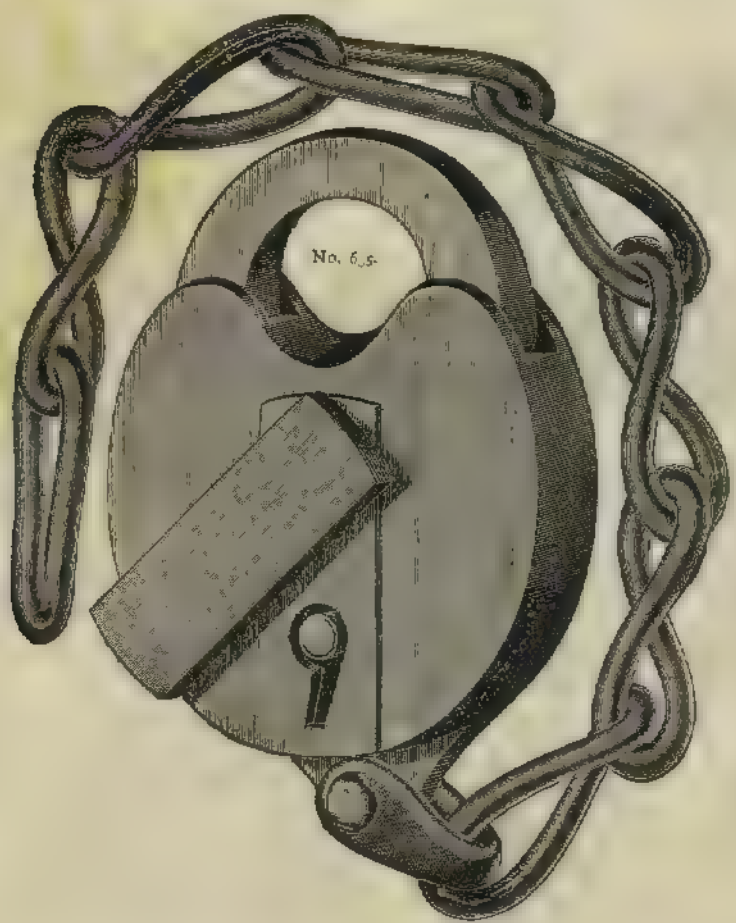
See Index for Lead Pattern Letters.

"BRONZE METAL" SPRING PAD LOCKS.

No.	Size. inch.	Two Keyed. Per dozen.	No.	With Chain. Per dozen.
309	1	$4 50		
229	1¾	7 20	429	$7 90
231	1⅞	7 90	431	8 75
233	2⅛	8 75	433	9 60

Cast Bronze Metal. Spring Shackle. Self-Locking. Flat Nickel Plated Steel Keys. Revolving Bushings.

No.	Size. inch.	Two Keyed. Per dozen.	No.	With Chain. Per dozen.
249	1⅝	$8 70	449	$9 65
251	1⅞	9 65	451	10 65
253	2⅛	10 70	453	11 70



Dust Proof.

Cast Bronze Metal. Spring Shackle. Self Locking. For Railroad Cars and Switches. Highly Polished. Spring Drop Cover over Key Hole. Very Heavy. 10 inch Japanned Chain.

No.	Size. Highly Polished.	One Keyed.	Two Keyed.
635	2 ⅛x3½x⅝	$15 60	$16 75
637	2½x4 x⅞	18 75	20 50
	Rough Finish		
636	2⅛x3½x⅞	13 50	15 75

ILLUSTRATION EXACT SIZE.

MERCAURO

(THE Tonic ALTERATIVE)

INCREASES THE QUALITY AND QUANTITY OF

RED BLOOD CORPUSCLES

More rapidly than any other known therapeutic agent.

CHAS. ROOME PARMELE CO.,
86 PLATT STREET,
NEW YORK.

AVERAGE DOSE 10 DROPS

"THE ACTIVE PRINCIPLE OF LIFE."

THE ORIGINAL — STANDARD

NUCLEIN SOLUTION.

FORMULA OF DR. JOHN AULDE

Nuclein Solution (Aulde) is permanent, non-toxic, non-irritant, thoroughly aseptic, and is not affected by climatic changes. It may be USED EITHER BY THE MOUTH OR HYPODERMICALLY.

GENERAL INDICATIONS: A disorganized state of the blood—all forms of wasting disease. It is our greatest builder.

Chemically, Nuclein is a phosphorized proteid, the chief of the "defensive proteids" of the organism; it is also found in portions and apparently absorbed and prolongs the vitality and growth of normal animal cells. The therapeutic virtues of Nuclein are due to its influence upon Leucocytosis—that is, Nuclein increases the number of leucocytes in the blood-stream, at the same time augmenting their functional activity thus stimulating cellular action to resist the morbid changes produced by bacteria and their products. The great value of this product has been repeatedly demonstrated in a long list of formidable diseases not alone as a curative agent, but as a preventive as well.

SPECIAL INDICATIONS: Diphtheria, Tonsilitis (Quinzy), Laryngitis, Typhoid Fever, Cholera Infantum, Diarrhea Dysentery, Pneumonia, Broncho-Pneumonia, Tuberculosis, Influenza, Bronchitis, Pleurisy, Anemia, Malaria and Chlorosis and all similar conditions when the wavering body needs support. It is invaluable after surgical operations and loss of blood from any cause.

Alkaloidal Clinic Coupon.

THE NUCLEIN CHEMICAL CO.:
Please send me a sample of Nuclein.....
(Preparation)
with descriptive literature. I will read the literature, test your sample carefully, and report results. I have never asked you for a sample of Aulde's Nuclein before.

Dr .....

Town ..... State .....
Stamps enclosed for postage.

PRICE TO PHYSICIAN AND DRUGGIST:

	Per Dozen
Nuclein Solution—One-half oz. (240 average adult doses)	$9.00
Nuclein Tablets—Two hundred (200 average adult doses,	9.00
Nuclein Powder—One-half oz. (2 drops of solution in each 3 grains)	9.00

The above preparations of Nuclein (Aulde) may be obtained of physician's supply houses and the trade generally.

SEND YOUR ADDRESS

For descriptive literature and case reports. Use coupon for sample, and send stamps for postage.

THE NUCLEIN CHEMICAL COMPANY
Station X, - - CHICAGO
THE ABBOTT ALKALOIDAL CO., Sole Agents.

INTERNATIONAL SUPPLY DEPT. PUBLISHING CO.
Chicago Ill. TRADE MARK Philadelphia Pa.

HARMONICAS.

Our line of Harmonicas are strictly high grade instruments, being made by some of the very best manufacturers in Europe. Each and every Harmonica guaranteed to be exactly as represented and to give the very best of satisfaction.

No. 8243. Genuine Richter Harmonica, same as above, but is double having 10 single holes at each side, 20 single holes in all. Our special price each..... $0.36
Per doz..... 3.60

No. 8244. "The New Troubador" harmonica. Perfectly tuned and of excellent tone. 10 single holes, white reed plate Price, each $0.10
Per doz 1.00

nickel plated covers. Price, each $0.18
Per doz 1.80

No. 8245. The harmonica shown is the famous Gebruder Ludwig Richter patent and the best cheap instrument made. Ten single holes; brass reed plates, nickel covers Price, each $0.12
Per doz 1.20

No. 8246. Genuine Gebruder Ludwig harmonica, Richter pattern, superior reeds, affording a rich, resonant tone. Ten single holes on each side, 20 holes in all; brass reed plates; nickel plated covers Price, each $0.23
Per doz 2.50

No. 8250 Professional Concert Harmonica. The celebrated Gebruder Ludwig makes; 10 double holes, 40 superior reeds, brass reed plates. Engraved German silver covers. An instrument of exceptional quality and tone. It is especially admired by professional players. Our special price, each..... $0.85
Per doz..... 9.00

No. 8252. The Silver Toned Richter. Highly nickel plated harmonica of special quality. Ten double holes, brass reed plates, nickel covers. Our special price, each..... $0.17
Per doz 1.80

No. 8254. The M Hohner harmonica, one of the well known Hohner pattern made. Ten single holes, best reeds and brass reed plates; nickel covers. Price, each $0.29
Per doz 3.00

No. 8256. The Hohner harmonica, with 10 double holes, silver covers, with reeds, brass reed plates and nickel covers. Price, each $0.45
Per doz 5.10

No. 8258. Like above. One of the finest Hohner harmonicas, 10 double holes, 32 superfine reeds, perfectly tuned in chords; brass reed plates, nickel covers. Our special price, each. $0.75
Per doz 8.00

No. 8260 Hohner harmonica. A double instrument of powerful and pleasing tone. Has ten double holes on each edge, 20 double holes in all, 80 very fine reeds, brass reed plates, nickel covers. Our special price, ea. $0.85
Per doz..... 9.00

No. 8262. A solo harmonica of the first quality; has an extra powerful tone and is made of the best material. Ten single holes, heavy nickel covers; it is a genuine bargain at our price $0.80

No. 8264. "The Marine Band" is a new segment for favor, and it is sure to win a high place as a solo instrument. It has 10 single holes, 20 reeds, brass reed plates, heavy covers nickel-plated, brass covers, and sells at a very moderate price $0.50

No. 8266. An extra well made harmonica, sailing a strong carrying tone. Ten double holes, 40 reeds, brass reed plates and heavy cover nickel-plated brass covers. In wearing qualities it is unsurpassed by any harmonica in the market. Price .. $0.65

OUR 25c BELL HARMONICA.

No. 8268. Genuine Richter Bell Harmonica, with bell. The best quality of reeds is used in this instrument; 10 single holes, brass reed plates, German silver covers, extended ends, 7 bell. Our price, each..... $0 25
Per doz 2 85

Postage, extra, 6 cents.

65c BUYS A DOUBLE BELL CONCERT HARMONICA.

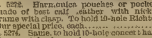
No. 8270. Our special Concert Harmonica, with bells. Best quality, 10 double holes, with 40 reeds; brass reed plates, fancy engraved German silver covers 2 bells. Weight 7 ounces. Our special price, each $0.65
Per doz 7 00

Postage, extra, 7 cents.

HARMONICA POUCHES.

No. 8272. Harmonica pouches or pocket cases, made of best calf leather with nickel-plated frame with clasp, to hold 10-hole Richter model. Our special price, each..... $0.10
No. 8274. Same, to hold 10-hole concert harmonicas. Our special price, each $0 15

METAL HARMONICA HOLDER.



No. 8276. Made to hold either Richter or concert pattern. Tube has opening at one end to produce either mute or tremulo effects. No artistic player should be without one of these holders. Price, each $0 10
Per doz $1.00

Postage, extra, each, 6 cents.

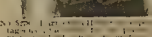
HARMONICA HOLDERS.

No. 8278. Harmonica holder, a decided advantage to the player, as he has both hands free to play the instrument. The holder is made of nickel plated steel, and is perfect in every respect. It is made to fit any harmonica, and is very easily adjusted. Price, each $0.24
No. 8280. Harmonica holder, made of nickel plated wire, and is the best holder made. Our special $0.09

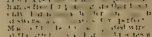
No. 8282. Flute Accordion. Wooden case, nickel trimmed, ten keys and two basses. Excellent quality of tone. Weight, 21 ounces. Our price..... $0.71

No. 8284. Flute Accordeon. Substantially made, with ten bone keys, two basses and excellent reeds. Wood case, with pearl bell. Weight, 30 ounces. Our special price..... $0.78

THE CLARIOPHONE.

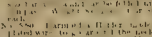


No. 8286. A handsome little musical instrument that possesses all the necessary qualities for pleasing the ear with melodious sounds. Wood body, white fancy metal ornaments. Ten keys, two basses and accordeon reeds. Weight, about 40 ounces. Our special price..... $1 10



No. 8288. In one of our finest grade accordeons, the tone is rich and full, and the ordinary instruments found in retail stores has ten patent nickel keys, two basses, escutcheon sides and keyboard with silk, ornamented nickel-plated corners, bellows and mouthpiece. Weight, about 30 ounces. Special price..... $1 25

THE KAZOO.

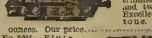


No. 8292. The Kazoo is the simplest musical instrument made. No trouble to learn. Place your lips to the instrument, make a noise on one end, and the pleasing music is heard from the other. Made of maple, with metal ring. Our special price $0.05
Per doz..... .45

TOY TROMBONES.

A very desirable instrument, especially for children

No. 8293. Brass, six reeds, superior quality. Price..... $0 60
No. 8294. Same, eight reeds, superior quality. Price $0 75
No. 8295. Brass, ten reeds, superior quality. Price..... $0 90



No. 8296. The Fanfare is a simple instrument with reed valves. Made of brass. Price, with 4 reed valves, superior quality, each..... $0 50
No. 8297. Same with 8 reed valves, each..... $0 65
No. 8298. Same, with 10 reed valves, each 75

INTERNATIONAL SUPPLY DEPOT PUBLISHING CO.
Chicago Ill. TRADE MARK Philadelphia Pa.

ACCORDEONS.

We carry only a strictly high grade and guaranteed line of accordeons, made by and imported direct from this very best European makers. Each instrument is carefully examined before being shipped and is guaranteed to reach you in perfect condition. Any accordeon sent C. O. D., subject to examination, upon receipt of $1.00. Three per cent off for cash in full with all orders. Perfect satisfaction guaranteed or money refunded.

No. 8230. **Accordeon. Our price, $2.00.** Sent C. O. D. on

receipt of $1.00. Double bellows, with two sets of reeds and double keyboards. Has nickel edges; open key board. The ten nickel keys are ornamented with gilt stars. The panels, corners and clasps are handsomely bronzed. This accordeon has two stops, two sets of reeds and double bellows. Send $1.00 deposit with order and we send accordeon by express subject to examination. Pay agent $1.00 balance when you receive it and if it is not all right, send it back.

No. 8232. **Accordeon. Special quality. Our special price, $4.25.** Nothing of equal value to be had at retail for $6.00. Made in imitation solid oak, with hand carved moulding and keys. Special bread reeds. Corners and clasps heavily nickel plated. Double bellows, two stops and two sets of reeds. We send this accordeon C. O. D., subject to examination, on receipt of $1.00.

No. 8234. **Our $2.45 Accordeon.** Made by the best known Berlin manufacturer. Quality unsurpassed. Rich full tone equal to parlor organ. Beautiful inlaid panel with open key board and ten nickel plated keys. Corners and clasps are also extra nickel plated. Double bellows, two stops and two sets of reeds. We send this accordeon C. O. D., subject to examination, on receipt of $1.00.

No. 8236. **Accordeon. Special price, $2.65.** A musical instrument of powerful tone and general superiority. One of the most popular styles made by a celebrated Berlin manufacturer. Made in imitation of solid oak with fancy moulding and panels. Open key board, corners and clasps nickel plated, double bellows, ten keys, two stops and two sets of reeds. Sent C. O. D., subject to approval, on receipt of $1.00. Bellows, $1.00, paid as express office. Weight, packed, 7 lbs.

No. 8238. **Miniature Accordeon.** A hand painted accordeon for $4.85. A beautiful instrument, capable of producing music that will captivate the most critical musician. The panels and moulding are handsomely ebonized,

sets of reeds. Weight D., subject to examination, on receipt of $1.00.

The "Tuxedo" Accordeon, with "Vox Humana" or Tremolo Attachment. Kalbe's Imperial. One special price, $4.65. Solid oak in large cities by retailers and at double our price. A musical instrument whose powerful and full round tones are a delight to amateur and expert alike. Made with handsome

ebonized mouldings and panels. Open keyboard with ten nickel plated keys and two basses. The hand painted ornaments on panels and the nickel plated corners and clasps make the instrument one which will delight the eye, as well as the ear. The double bellows are leather bound. Two stops and two sets of reeds with Vox Humana attachment, C. O. D., subject to examination, on receipt of $1.00. Weight, packed, about 9 lbs.

No. 8244. **A $12 Accordeon for $6.15.** No one

you need pay only our special importers price to throw in a complete instruction book and it saves you all the expense of a teacher. This decidedly superior instrument is fault-

less in construction, appearance and musical possibilities. Has ebonized mouldings and panels, nickel bordered. Open keyboard. Gold stamped butterette double bellows. Ten nickel keys, nickel plated corners and clasps, three stops, three sets reeds. Weight, packed, about 11 lbs. Sent C. O. D. on receipt of $1.00 and you can examine it at the express office.

No. 8246. **New Style Accordeon. Special price, $6.85.** The "Empress" professional instrument. Broad mahogany molded frames, mahogany panels and keys. The frame and panels are ornamented with handsome gilt and nickel ornaments. Clasps and corners fully nickel plated. Parisian open key board, double reed tongues, ten keys, eight stops, four sets of reeds, tuned in octaves. Complete with leather bellows. Weight, packed, about 18 lbs. Sent C. O. D., subject to examination, on receipt of $1.00.

No. 8248. **Kalbe's Imperial.** Our extra fine quality Accordeon, and the player who gets one of them will be more than satisfied. This instrument is a perfect gem in tone, while its durability and workmanship it can not be surpassed. It has ten keys, four stops, four sets of reeds and a double bellows. A handsome ebonized frame, with deep mouldings of same material, gilt ornaments on panel and substantial nickel corners and clasps add much to its appearance. We consider this one of the best bargains ever offered at the price..... $8.35

Kalbe's Quality Double Row Accordeons. Imitation mahogany mouldings, ebonized panels, nickel keys and guard, double bellows with nickel bellows protector, nickel corners and clasps. 19 keys, 2 stops, 2 sets of reeds. An instrument of excellent quality of tone. Price $4.45

No. 8251. Same as above, but with 21 keys. Price..... $7.50

No. 8252. **Kalbe's Imperial. Finest Double Row Accordeon Made.** This elegant accordeon has ebonized mouldings and panels, silver stamped butterette bellows, nickel corners and clasps, 19 keys, 3 stops, 3 sets of reeds. Has a full, rich tone, and is a perfect gem in appearance. Price..... $5.45

No. 8253. Same as above, but having 21 keys. Price..... $6.75

CONCERTINAS.

No. 8260. **This beautiful Concertina** as shown in the illustration is finished in imitation rosewood, has 2 full bellows, well bound, 20 nickel keys, beautiful figured border. An instrument capable of producing very pleasing music, and

Weight, boxed, about 2 lbs. **$2.25**

No. 8262. **Concertina. Our special price, $2.85.** Almost popular instrument and one capable of producing music of remarkably sweetness and power. The one shown in the illustration has 30 keys. Mahogany tops decorated with gold ornaments. Nickel bound rings. Extra quality large bellows. Weight, packed, about 7 lbs. Sent C. O. D., subject to examination, on receipt of $1.00.

No. 8264. Very few instruments of its class have met with the popularity enjoyed by this style Concertina, and that it merits its remarkable success everyone who has played upon it will testify. The choicest mahogany has been used in the tops, the mouldings are nicely carved and the best leather bellows are made to wear. It has 30 nickel keys and is an exceptional bargain at our price. **$4.50**

No. 8266. English-German model. A very substantial, well-made instrument having 32 nickel keys, a strong leather bellows, polished San Domingo mahogany tops and a tone that will please the most exacting taste. Price with wood case only..... $9.25

INTERNATIONAL SUPPLY DEPT. PUBLISHING CO.
TRADE MARK
Chicago Ill. Philadelphia Pa.

Our International Salve

is invaluable for all abrasions of the skin. Athletes should have a box with them at all times. Price, 24 cents

American Foot Ball.

This ball is made of black rubber and bears Spalding's trade mark. Its lasting quality is something remarkable. Each.

No. 72. Circumference, 23 inches $0.50
No. 74B. Circumference, 26 inches ..... .60
No. 76A. Circumference, 30 inches ..... .75

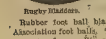
Foot Ball Bladders.

Rugby Bladders. Association Bladders.

Rubber foot ball bladders for either Rugby or Association foot balls. These bladders are made of an extra fine quality of India rubber and bears Spalding's official stamp. Each.

No. 72B. For Rugby balls, Nos. 72, 72A, 72B $0.40
No. 74B. " " " 74, 74A, 74B ..... .45
No. 76B. " " " 75A, 76, 76A ..... .50
No. 72BA. For Association balls, Nos. 72A, 72B ..... .40
No. 74BA. For Association balls, Nos. 74A, 74B ..... .45
No. 76BA. For Association balls, Nos. 75A, 75B ..... .50
No. 76BA. For Association balls, No. 76A ..... .55

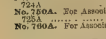
Foot Ball Inflaters.



This is an extra large and powerful inflater and especially intended for college and club use. It is made of polished brass. Extreme length closed, 18½ inches; cylinder, 10 inches long, and diameter, 1¼ inch. Each

No. 78B. Club brass inflater $0.89

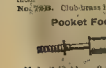
Pocket Foot Ball Inflater.



Made of highly polished brass, convenient in size and quick in action. The cylinder is 6¼ inches long and diameter ¾ inches, extreme length closed, 7¼ inches. Each.

No. 72B. Brass inflaters $0.35

Morrill's Nose Mask.

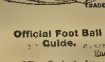


breathe while playing.

No. 71X. Morrill's Nose Mask made of finest rubber and gives absolute protection to nose and teeth 1.89

No. 72E. Mouthpiece made of rubber to protect the mouth and teeth; while in use it will not interfere with breathing ..... .25

Official Foot Ball Guide.



Each.

No. 71B. Revised by Walter Camp; new rules and referee's book; hints to beginners and how to develop a team ..... .10

LAWN TENNIS GOODS.

"Hercules" brand Tennis Nets, white, cotton made.

No. 71C. Single court, 27 feet, 12 thread $0.85
No. 72C. Double court, 36 feet, 36 thread 1.85
No. 73C. Double court, 42 feet, 15 thread 1.60

White, Canvas Bound, Machine Made.

No. 72L. Double court, 36 feet, 15 thread $1.75
" 72L. " " 42 " 15 " 2.00

White, Canvas Bound, Hand Made.

No. 72L. Double court, 36 feet, 21 thread $2.50
" 73L. " " 42 " 21 " 2.75

Back Stop Nets, White.

No. 75L. 50x3 feet, 12 thread $2.90

Lawn Tennis Rackets.

Our rackets are made by A. G. Spalding & Bro., and other high grade manufacturers. The frame is of superior quality, being made of whitewash. Good quality gut, checkered cedar handles and neck finished.

No. 72D. The Favorite $1.15
" 73D. " Geneva, medium size 1.50
" 74D. " Greenwood, full size 2.00
" 75D. " Lakeside, full size 2.75

If you need a reliable **Watch** consult our **Watch Department.**

Wright and Ditson Rackets.

No. 76D. The Campbell. Designed by C. S. Campbell and is a duplicate of the one used by him in the championship games at Newport. Frame is of the best seasoned ash, narrow, scored handle, and stringing of the best white English gut. The greatest possible care is taken in all details of its construction. Each $5.75

No. 77D. "Sear's Special." Frame is best selected second growth white ash, with mahogany throat piece, handsomely finished, stringing of the highest grade red and white centre English gut, with checkered handle. Each 5.50

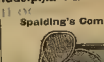
No. 78D. "Sharpe Special." Same quality as above, cork handle. Each 6.25

Tennis Balls.

No. 70E. Spalding's Tournament ball, covered with flannel and warranted first-class in every particular. Each, 35 cents. Per dozen $3.45

No. 36E. Wright & Ditson championship tennis balls Each, 39 cents. Per dozen 4.50

Spalding's Complete Tennis Sets.



No. 71T. The Favorite set consisting of four Favorite rackets, four rubber balls, one net 27x3 two pairs tapelines, one marker, one set score pads, book of rules. In box complete $8.25

No. 73T. The Geneva set consisting of four Geneva rackets, four rubber balls, one net 27x3 feet, two portable poles, one mallet, one set score pads, book of rules. In box complete 10.00

No. 75T. The Lakeside set consisting of four Lakeside rackets, one 27x3 feet Paragon net, two portable poles, one mallet, one set score pads, book of rules. In box complete 13.00

Spaulding's Athletic Library.

Each book is well bound in paper covers and contains all the latest rules and instructions of the different games and sports.

No. 79. Indian Club and Dumb Bell practice with forty-nine illustrations. Price 10
No. 48. Lawn Tools, illustrated. Price 10
No. 71X. Association Foot Ball Rules. Price 10
No. 76C. Indoor Base Ball Guide. Price 10
No. 77. Base Ball. Price 10
No. 71B. Hand Ball Guide. Price 10
No. 72C. Cricket Guide. Price 10
No. 72E. How to Play Foot Ball. Price. 10
No. 73B. Physical Culture. Price 10
No. 75B. Bowling, containing full instructions. Price 10
No. 74C. Archery Guide. Price 10
No. 75D. Official Croquet Guide 10
No. 74E. Punching Bag and how to use it. Price 10
No. 76B. Cricket, new and. Price 10
No. 77C. Golf Manual. Price 10
No. 79. Athlete's Guide. Price 10
No. 75. Gymnastic instructions, horse bars, trapeze and flying rings. Price 10

Gard's Samoan Oil

Is not its wonderful curative power for all pains, aches and soreness, burns and scalds, cuts, bruises, falls, rubs, strains or breaks, worry or nervousness, mother's plasters, rheumatism, sore throat, all pain, coma, cramps, earache, tooth ache, stomach ache, neuralgia, fever sores, sores, bruises, sore tongue, black creep, lameness, chilblains, chapped hands, sore throat, bites, stings, insect bites, sprains, bowel complaint, children's ailments, toothache and headache. Prepared from herbs, roots and flowers gathered by the Samoan Islands in the Southern Pacific.

For Cyclists and Athletes.

For a Sore Throat—Mix one part of Gard's Samoan Oil with one to four parts of common white hazel, according to circumstances, and if cold weather, use a little of it in each hand; then in warm weather, less quantity will suffice. Rub on the throat as far as the pain extends, and if throat is very much inflamed, the mixture should be applied two or three times a day. Gard's Samoan Oil is also a splendid remedy for all kinds of sore throat, and if used as above, will soon relieve the most severe case. Gard's Samoan Oil is also a splendid remedy for all kinds of sore throat, and if used as above, will soon relieve the most severe case. Gard's Samoan Oil is also a splendid remedy for all kinds of sore throat, and if used as above, will soon relieve the most severe case.

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Gard's Samoan Oil is obtainable for the use of athletes of sore and stiff muscles, the good rubbing down of the joints and muscles with the oil hastens the polished with elsewhere will strengthen the muscular action and insure much less fatigue in all athletic exercises. Athletes are almost sure to accident from time to time to repair themselves with it bruised, scraped or cut in a comes down.

Our Special Cut Price, 20 cents.

If Single bottle is ordered, send 5 cents for postage, but it is best to order it enclosed with other goods by express or freight and save postage.

Persons should order Samoan Oil, to guide by freight or express with other goods, as the carriage is trifling and we are enabled to send 2-oz. bottle. But when one bottle has to go by mail we are forced to send a 1-oz. bottle owing to the cost and weight of the patent mailing case required by the government.

BOXING GLOVES.

Our Fitzsimmons Special Boxing Gloves were designed by Robert Fitzsimmons, the champion of the world, and are exclusively used by him in all championship contests and in training. The material and and workmanship are of the highest quality. They fit perfectly, and by their peculiar construction, absolutely prevent any chance of injury to the hands or wrists. Each set is carefully inspected before packing and bears an autograph letter of Champion Fitzsimmons' endorsements. Made in three sizes, in sets of four gloves.

No. 711S. "Fitzsimmons Special Glove," 6 oz., per set..... 5.00
No. 711A. "Fitzsimmons Special Glove," 6 oz., per set..... 6.50
No. 711B. "Fitzsimmons Special Glove," 6 oz., per set..... 5.50

Corbett Gloves.

This is a brand of gloves, which we can cheerfully recommend to the public. They were especially designed by Jas. J. Corbett, ex-champion of the world. They are made of the finest quality of material throughout. It is a glove that will give satisfaction to every one. Made in two sizes in sets of four gloves.

No. 710. Corbett Glove, 5 oz., per set..... $6.00
" 710AA. " " 6 " " " 6.00

Regulation Boxing Gloves.

No. 79. Corbett pattern, 5 oz., regulation, gamble tan leather, ventilated palm, laced wrist bands..... 3.75
No. 711. Corbett pattern, gamble tanned leather, well padded, laced wrist band..... 3.50
No. 712. Same as No. 711, in olive tanned leather..... 3.00
No. 716A. Corbett pattern, soft olive tanned leather, extra well padded, elastic wrist band 2.50
No. 719. Same as No. 716A, oxven tanned leather..... 2.00
No. 722. Regular pattern, light colored soft tanned leather, well padded, elastic wrist band..... 1.25

Double End Striking Bags.

Each bag complete in a box.

No. 76. Double end bag, regulation size, extra fine leather cover, fine rubber bladder, and workmanship of best quality throughout..... $4.50
No. 75. Double end bag, regulation size, special glove tanned leather, substantially made..... 3.50
No. 74. Double end bag, regulation size, good quality, leather cover..... 3.00
No. 73. Double end bag, medium size, fine grain leather cover..... 2.00

STRIKING BAGS.

The Standard Special.

No. 712. We sell this bag at a price that can not be duplicated. It is regulation size and attached with silk. The rubber bladder is of the very best quality. The whole thing complete in box..... $4.50

No. 710B. "The Standard," regulation size, olive tanned leather cover, and well made. Complete in box..... 3.00

No. 717. "The Expert," of fine olive tanned leather. Complete in box..... 3.00

No. 716. "The Practice," medium size, fine grain leather cover. "Our special leader"..... 1.75

No. 715. "The Amateur," medium size, soft tanned leather cover. Complete..... 1.35

No. 714. "The Favorite," medium size. Complete in box..... 1.00

No. 718. The Fitzsimmons special bag, highest quality, designed and endorsed by Robert Fitzsimmons, champion of the world. Price..... $4.50

No. 718S. Same as No. 718, but trifle lighter..... 4.50
No. 718A. "The Spalding" gymnasium bag, highest quality, especially designed for gymnasium work, regulation size and best workmanship throughout, complete in a box..... 4.50

Extra Bladders.

No. 705. For bags Nos. 714, 715, 716, 716S. $0.80
" 707. " " 710, 712, 717, 718... .70
" 705A. For bag No. 79..... .50
" 77. " bags Nos. 75, 76, 74..... .75
" 7D. Elastic floor attachment..... .50

Perhaps you want a Sweater? We have them

Striking Bag Gloves.

No. 71. Tanned kid, padded..... $2.00
No. 72. Soft tanned leather, padded... 1.25
No. 73. Soft tanned leather, padded..... .50

Brass Inflaters.

No. 73I. Club size, cylinder 10 ins..... $0.75
No. 73J. Regular size, cylinder 5½ ins..... .35

Striking Bag Swivels.

Fig 5. No. 711.

No. 709. Ball and socket action, full nickel-plated. The complete swivel is permanently attached to ceiling or drum. The part containing socket and to which rope is attached (Fig. 5) unscrews from base. This permits the bag to be quickly suspended without readjusting the height, and can as readily be removed when not in use. A very desirable attachment for those having private bags to gymnasiums. Complete..... $0.65

No. 710A. Ball bearing swivel, same style as No. 79, with addition of ball bearings. Complete..... 1.70
No 711A. Swivel action, japanned iron, fastens permanently to disc, and rope is attached to Hog Complete..... 65

Take one of our cameras with you on your outing trips

FOOT BALLS.

Rugby Foot Balls.

Trade mark quality. Guaranteed.

The quality of this ball is superb and is bound to give satisfaction. Each.
No. 72AA. Rugby, small size..... $2.00
No. 74AA. " medium size..... 2.25
No. 75AA. " regulation size..... 2.50

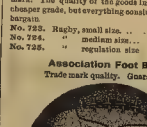
Rugby Foot Balls.

Standard quality. Not trade marked.

This ball is of the same pattern as the above, excepting that it is not stamped with Spalding's trade mark. The quality of the goods in this ball is of a cheaper grade, but everything considered it is a great bargain. Each.
No. 72S. Rugby, small size..... $0.98
No. 74. " medium size..... 1.05
No. 75. " regulation size..... 1.15

Association Foot Balls.

Trade mark quality. Guaranteed.



This ball is the exact counterpart of the above cut, the quality is guaranteed. Each ball packed complete in separate box. It is a winner for the price. Each.
No. 73A. Association, small size..... $2.00
No. 74A. " medium size..... 2.25
No. 75A. " regulation size..... 2.50
No. 76A. " large size..... 2.75

Association Foot Balls.

Standard quality. Not trade marked.

This ball, while of standard quality, bears no trade mark. We enclose each ball complete in box. We are practically giving it away at the prices quoted below. Each.
No. 72SA. Association, small size..... $1.05
No. 74SA. " medium size..... 1.20
No. 75SA. " regulation size..... 1.50

JAIL LOCKS.

These Locks are all malleable iron, japanned cases, Key locking; horizontal revolving Tumblers, and are furnished with two polished Iron Keys to each lock.

No. 109,	size across case,	1¼	inch	per doz.	$ .89
" 110,	" "	1½	"	"	1.00
" 111,	" "	1¾	"	"	1.24
" 112,	" "	2	"	"	1 45
" 113,	" "	2¼	"	"	3 90
" 114,	" "	2½	"	"	6.00

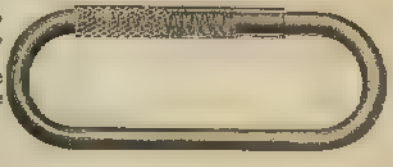
No. 110.

BILLINGS' KEY RING.

This Ring is represented full size, and consists simply of an oval ring, cut at one side, and a sliding knurled sleeve, backed up by a spiral spring, which causes the sleeve to close the opening in the Ring.

The superiority claimed in this Ring over others now in use lies in the shape and facility with which the key can be put on and removed from the Ring.

Price.....per dozen, $1.20.



STAFFORD'S KEY RINGS.

No. 3, Closed.

Made from the finest quality German Silver, highly polished, will not rust or corrode, can be easily opened or securely closed.

Either size	per gross,	$8.00
"	per dozen,	0.75
Sample by mail		0.15

No. 1, Opened.

Fig 1.

WATCHMAN'S CONTROL WATCH.

This Watch records the stations to which the watchman went, how long he stayed, where he went next, and the stations he missed.

PRICE LIST.

Control Watch, with 6 keys, a book for two years, a box of slips for one year	$40.00
Extra Keys, with Chain.....each	1.00
Box of Slips, containing 400	1.00
Record Book	1.00
Leather Pouch	3.00

No. 1.

ORIGINAL BICYCLE OILER.

No. 1.

Tin.....	Per doz..	$1.65.	Each..	$0.14
Brass.....	" ..	1.65.	" ..	0.14
Nickel.....	" ..	2.00.	" ..	0.17

DAISY POCKET OILER.

No. 2.

Nickel Plated.. Per doz. $2.00. Each. $0.17

No. 2.

STEEL OIL CANS.

With Brazed Bottoms for Machine Shops.

The body is drop-forged in one piece. The bottom is made of clock spring steel brazed in. The spout is of hardened steel, brazed together. Red heat won't melt the brazing. Diameter of bottom 2¾ in., spout 3 in. long

Per dozen..... $6.00

Price, each..... .50

POCKET OILERS AND SHEATHS.

Absolutely Air and Oil Tight.

The act of pressing on the protruding wire plunger opens the valve and releases one drop of oil. The use of this Oiler insures freedom from waste, coagulation or leakage, and the wooden sheath is an additional safeguard to the pocket or gun case.

Each..... 25c.

MALLEABLE IRON OILERS.

With Brass Bottoms.

Nos.....	1	2	3
Diameter, inches.....	3¼	3⅜	3⅞
Per dozen.....	$3.60	4.00	4.40

Extra Tubes.....per dozen, $1.80

"PERFECT" POCKET OILERS.

The cleanest and handiest pocket oiler in the world

For Bicycles, Guns, Fishing Tackle, Typewriters, Sewing Machines, Roller Skates, etc.

This Oiler consists of a tube for holding the oil, fitted at the top with our patent tip, which can be unscrewed to refill the oiler. Although this tip prevents all leakage, a cap (of the same diameter as the body of the oiler) fits over the top as an additional protection, and to prevent the tip being bent or filled with dirt when carried in pocket or among other tools.

This tip throws only a small quantity at a time and prevents all spilling and waste of oil. As the ordinary oil can throws from 20 drops and upwards at each stroke, the immense superiority of this oiler as to neatness, cleanliness and economy, will be at once apparent.

The shape and nickel finish make it the handsomest, neatest and most convenient oiler in use.

Each.....25c.

GEM TANKS.

For Turpentine, Heavy Oils, Etc.

With either "Gate" or "Faucet."

Size,	30 gallons	$5 00
"	60 "	6.50
"	120 "	12.00
"	180 "	17.00

PERFECTION OIL TANKS.

The Perfection Tank by reason of its superior construction, unequaled beauty of finish, perfectness of adaptation as to cleanliness and general utility, ranks superior to all others, and stands so regarded by the trade of the entire country. Has now been in the market for years, and acquired a reputation and a market accorded to no other tank in use. Securely packed for shipping.

Nos.....	0	00	000	1	2	3	4	5
Capacity, gal.	6	12	25	60	100	150	200	250
Each.....	$5.00	6.00	7.50	12.00	18.00	24.00	30.00	33.00

THE W. & B. TANKS.

This tank (like the Perfection) is constructed in the most substantial manner, of heavy galvanized iron, and has a wooden bottom secured underneath the metal bottom, which is extra heavy, to protect it from the floor, and give additional strength to the tank; is handsomely japanned and lettered, making an attractive ornament; takes up but little room, and by its strong handles is easily removed.

Nos.....	0	00	000	1	2	3	4	5
Capacity..gal	6	12	25	60	100	150	200	250
Each.....	$5.00	6.00	7.50	10.50	16.50	21.00	24.00	28.00

Set of Measures (4) and Funnel.....$1.50

Brass Padlock and Stop-cock for Filling Oilers..... 1.25

The above cut represents the W. & B. Tank open and in use.

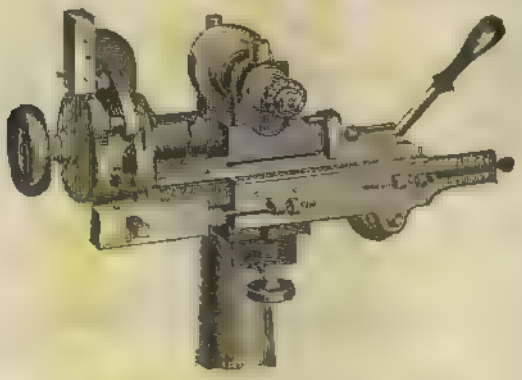
OILS.

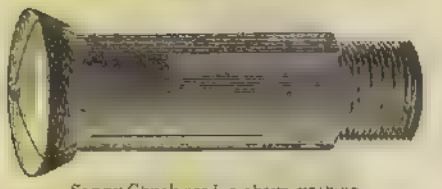
Best Cylinder.....per gallon,

" Engine..... "

Oils furnished for all purposes. Special quotation on Barrel Lots.

SEMI-AUTOMATIC PINION OR GEAR CUTTERS.





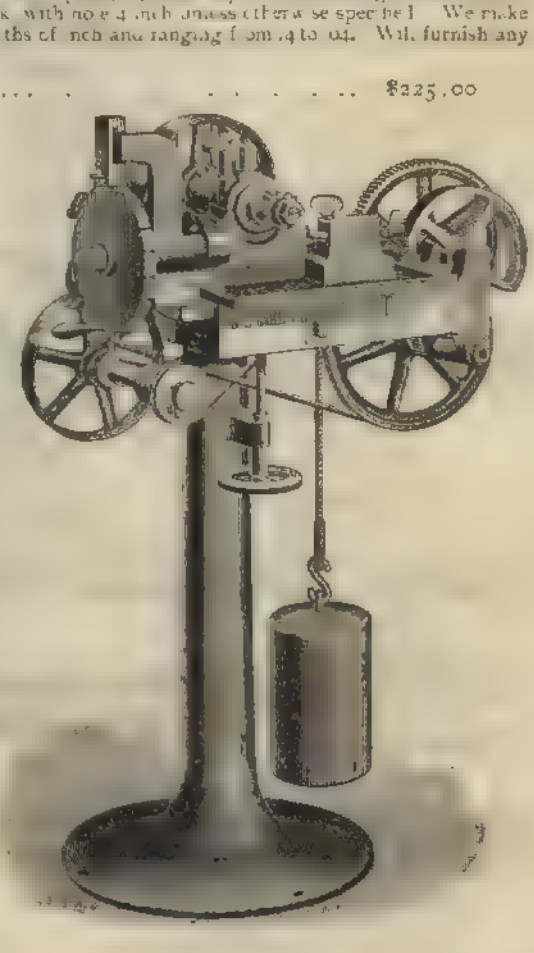
Spring Chuck used in above machine

The cut shown illustrates the head and table of Pinion or Gear Cutter, adapted to cut the same up to three inches in diameter, and twelve pitch or finer. The index head is fitted up with a hollow spindle. Spring chucks, which are quickly opened or closed by the drawing-in spindle and the hand wheel shown on the left, are designed to be used to hold either the shank of pinion, if cut from the solid, or one end of the mandrel on which gear blank is placed. The index head and tail stock are attached to a sliding table, which is traversed in a right line with the cutter arbor by means of hand lever, pinion, and rack. The index spindle is revolved by a pawl which, by a neat mechanical device, gets its motion from a connection with and from the movement of the sliding table. In operation, while the table carrying the head and work is being fed by movement of the hand lever toward the cutter the index arbor is securely locked in place, and the pawl is dropping back into position to again engage with the index. When the table has been moved forward sufficient to pass work by the cutter, the movement of the hand lever is reversed, and as the table and work is being carried back, the index is unlocked, the pawl engages with the index at any point desired, the same being governed by the adjustable shoe or guard, which can be set so as to keep the pawl out of engagement until the proper time for the movement of index to commence. The reverse movement being continued until the table has returned to its first position, the pinion or gear blank is securely locked, and in place for the cutting of the next tooth. Thus it will be apparent that after the machine has been properly adjusted, the operator has simply to manipulate the hand lever, the indexing being done both automatically and positively. The indexing arrangements will admit of adjustment to cut seven or more teeth with a proper index gear. With the machine is one index gear with 120 teeth, and without charge we will furnish one other index cut as the purchaser may request. The 120 index can be [illegible] 60, 40, 30, 24, 20, 12, 10, and 8 teeth.

The spindle of the cutter head has a No. 1 Morse taper hole in the front end, to which a cutter arbor to take standard cutters ⅞ hole, as cut, are furnished. The spindle runs in split brass boxes and has ample end adjustment by screw collars at each side of the front bearing. The two-speed pulley on spindle is 3 and 2 inches diameter, 2½ in face. The three-speed pulley on the countershaft is 14 and 12½ inches diameter and same face. The tight and loose pulleys are 5 inches diameter and 2¼ inches face. Driving the tight and loose pulleys 450 revs per minute will give about 1,500 turns of the cutter. For the index head we furnish a spring chuck with nose 4 inch unless otherwise specified. We make thirty-seven sizes of these chucks, holes increasing by hundredths of inch and ranging from .04 to .04. We furnish any one size selected with the machine, and extra chucks at $2.50 each.

Machine complete as stated..... $225.00

AUTOMATIC PINION OR SMALL GEAR CUTTERS.



In this machine small gear blanks up to 3 inches in diameter can be placed on arbor and cut automatically in stacks of not over 3 inches face. The spindle is of steel, running in gun metal boxes, provided with take up, and threaded collars either side of the front bearing provide end adjustment for the cutter. The cutters should have standard ⅞ inch hole in same. The table is raised and lowered by the hand wheel and screw. The index attached to the live centre and pawl are moved automatically, so that a string of blanks placed on centres and machine started, the work will proceed until any number of teeth from 7 to 300, if wanted, are cut, and at the completion of the last tooth the feed stops. In operation, a stack of blanks, as many as the arbor on which they are placed will support, not exceeding 3 inches face however, are placed on the centres. Where a great portion of the work is to be the same kind, a special index with the exact number of teeth to be cut is desirable. The feed is thrown in by the lever handle shown under index, and the work passes by the cutter. At the completion of the cut the table and work are quickly returned to the first position by the weight. At the same time the index is unlocked the pawl drops back and advances over an adjustable idler shoe, picking up the first tooth presented after leaving the shoe and carrying it forward to its extreme travel where the index is locked once more, and the second cut proceeds. At the completion of the last cut the feed is thrown out automatically. One operator can run a number of these machines. They can generally be run in connection with some other tool, as they only require attention once in one to three hours, according to the work done. Those having work adapted to this tool will find it a most desirable one.

Machine, counter and two indexes..... $275.00

GENUINE SCOTCH GAUGE GLASSES.

LENGTH Inches	External Diameter. ⅜ & ½	⅝	¾	1 in.
10	$3.00	$3.60	$5.04	$6 12
11	3.24	3.96	5.64	6 72
12	3.60	4.32	6 12	7.32
13	3.84	4.80	6.60	7.92
14	4.20	5.16	7.08	8.52
15	4.44	5 52	7.56	9.12
16	4.80	5 88	8.16	9 72
17	5.04	6.24	8.64	10.32
18	5.40	6.60	9 12	10.92
19	5.64	7.08	9 60	11 52
20	6.00	7.44	10 20	12 12
22	6.60	8 16	11 16	13.44
24	7.20	8.88	12.12	14.64
30	9.00	11.16	15 24	18.24
36	10.80	13.44	18.24	21 96
48	14.52	18 00	24 36	29.16
60	18.12	22 56	30 48	36 48
72	21.84	27.12	36 48	43 80

60 x 1¼ inches, $60 00
Sizes over 24 inch special discount.

RUBBER GAUGE GLASS WASHERS.

Size,	⅛ in.	⅜ in.	½ in.	⅝ in.	1 in.
Price, per doz.,	$0.20	.25	.30	.50	.65

GLASS TUBE CUTTERS.

For Cutting Gauge Glasses to Length.

One arm has a scale in inches and fractions of an inch, a slide stop with set screw, and a rotary cutter at the end. This arm is inserted in the end of the glass tube to the required distance, against the slide stop or gauge, the outside of the glass tube resting in the circled end of the other arm. With a slight pressure of one hand on the handles, and a rotation of the glass with the other hand, the rotary cutter makes an even cut around the inside of the tube, and a very little pressure breaks it off.

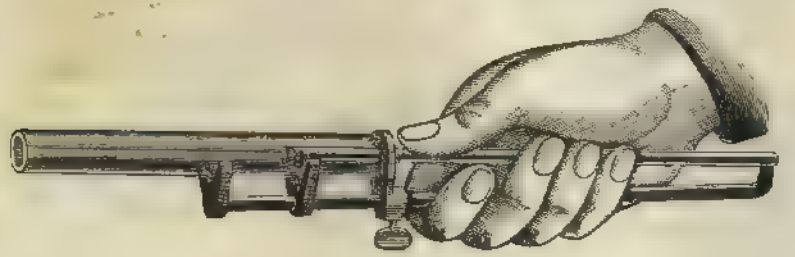
Two sizes are made, Nos. 1 and 2.

No. 1 has a scale up to 5 inches.....$2.50 | No 2, up to 7 inches.....$3.00

FAVORITE GLASS TUBE CUTTER.

Place the tube to be cut on a table or other level surface, insert the rod, and bring the wheel in contact with the glass. Bear down slighty on the tool, and at the same time impart a rotary motion to the tube with the palm of the left hand The cutter-wheel will then mark a perfect circle on the inner surface of the tube, and a gentle tap will cause it to break off with a clean smooth fracture.

Price, each.....$0 25



EUREKA GLASS TUBE CUTTER.

Cuts a perfect circle, as the glass is held in a parallel position by the fibre rests. Glass does not come in contact with metal except at the cutting wheel. Will cut greater length glass than any other cutter and wheels can be renewed without trouble.

Price, each.....$1.00

GLASS CUTTERS.

Genuine Diamond Glass Cutters.

Price.....$5.00 to $25.00 each.

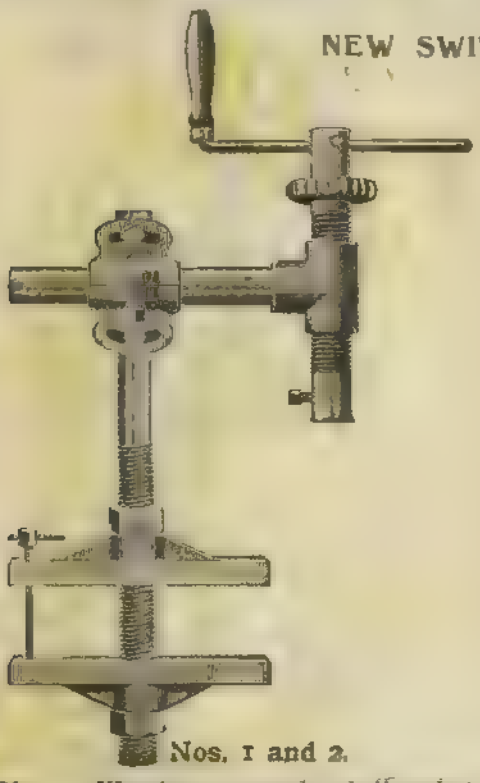
Goodell's No. 1, with six steel wheels in revolving head.

Per doz.,.....$4.00 Each,.....$0.35

"Fulton," with one chilled steel wheel.

Per doz.,.....$1.80 Each,.....$0.15

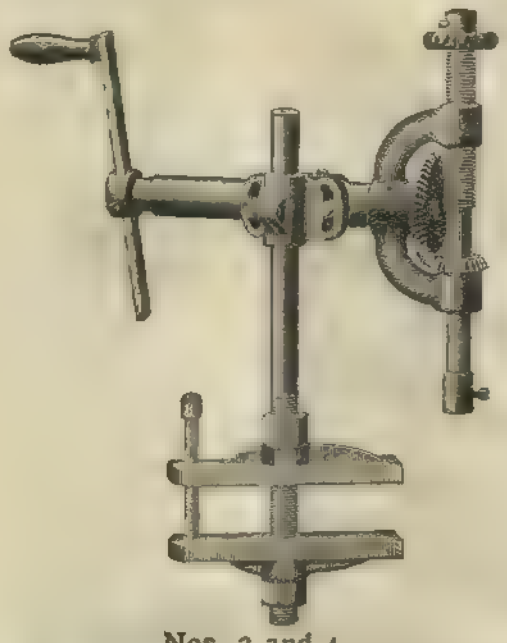
NEW SWIVEL CLAMP DRILLS.



Nos. 1 and 2.

No. 1. Weight, 30 pounds; drill socket, ½ inch. Will drill 1 inch hole 2¼ inches deep, at any angle. Price.....$13.00

No. 2. Weight, 40 pounds; drill socket, ¾ inch. Will drill 1 inch hole 2½ inches deep, at any angle. Price.....$20.00

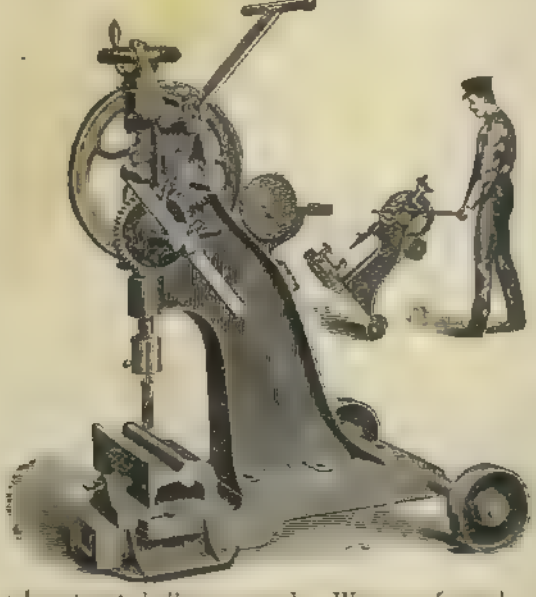


Nos. 3 and 4.

No. 3. Weight 40 pounds; drill socket, ½ inch. Will drill ½ inch hole 4 inches deep, at any angle. Price.....$20.00

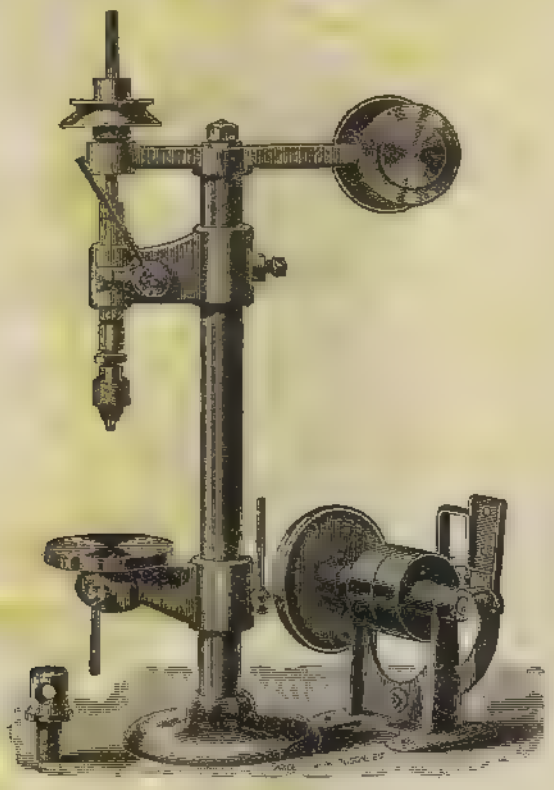
No. 4. Weight 50 pounds; drill socket, ¾ inch. Will drill 1 inch hole 4 inches deep, at any angle. Price.....$25.00

PORTABLE RAILROAD DRILLING MACHINES.



This illustration represents a new Drilling Machine for railroads of all kinds as well as bridge builders and structural work. It is intended to do the work and take the place, so far as possible, of the slow ratchet drill. It will do the work of a ratchet drill in less than one-fifth of the time. Where it is necessary to drill a rail and have it in place at a certain time, a saving like the above in time is of great value. This machine is built strong enough for any work about a railroad yard or railroad, and is provided with trucks so as to be easily moved from place to place. This machine has automatic feed with four changes; it is double geared, so when the crank is put on the balance wheel shaft the power is doubled. The balance wheel also has a handle on rim (not shown in cut) so that two can work at one time. It will drill from 0 to 1¼ inch hole. The spindle has a run of 4 inches and there is a hand wheel provided for quick return of same. The drill socket takes ¾ straight round shank; it can be removed and another size shank or our Universal Chuck put on in its place. We would advise the use of twist drills in this machine rather than hand forged ones, as more and better work will be done when twist drills are used. We can furnish any size at market prices. A valuable feature of this machine is the grinding attachment; the drills can always be kept sharp, thus saving a large amount of time and labor. A rubber pulley is brought in contact with the balance wheel by turning a thumb-nut, and released in the same way. The emery wheel has seventeen turns to one of the crank, giving great speed to the emery wheel with very little outlay of strength. The chuck for holding the rail can be removed and a great variety of work can be drilled. This machine will also make a good bench drill by removing it from its base and bolting it on a bench. The trucks are 6 inches in diameter with 2¼ inch face. Weight, 200 pounds. Each.....$40.00.

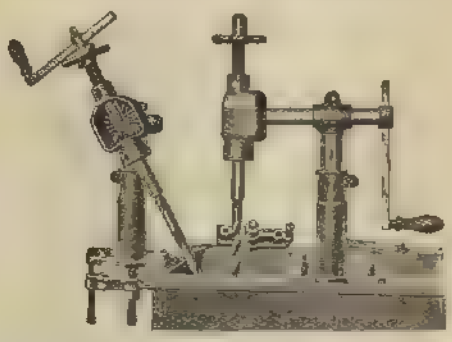
BUFFALO IMPROVED BENCH DRILL.



This machine is built for doing rapid work with small drills, from $\frac{1}{16}$ inch to the smallest size, without danger of breaking the drills.

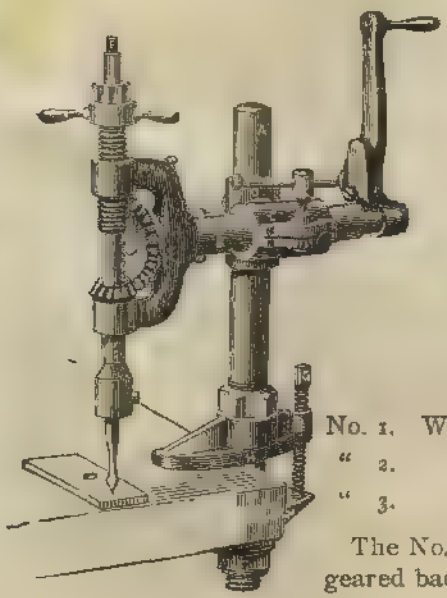
Weight, 40 lbs., with Countershaft.....$25.00
No 1—Almond Chuck, fitted..... 5.50

PORTABLE HAND DRILLS.



In order to have a light but very strong tool, all the castings are made of steel. The shape of parts and distribution of metal is such as to insure a maximum of strength and stiffness. They are very convenient to set and adjust. When the bottom clamp and stud are used, they can be fastened to a bench or the flange of a casting; and with the clamp and stud removed they can be bolted to any flat surface. The post and arm are both round and held in split bearings, this allowing the drill to be placed in any position and at any angle. In the Nos. 2 and 3 the crank handle is adjustable in length to suit the size of hole being drilled, and can be used either at the end of the arm or at the end of the spindle.

No.	Price.	Will Drill up to a Diameter of	Greatest Distance from Spindle to Center of Post.	Vertical Adjustment of Arm on Post.	Spindle Traverse.	Socket in Spindle	Weight of Handle	Weight Boxed Pounds.
1	$16.00	$\frac{1}{2}$ in.	6$\frac{1}{4}$	4	2$\frac{1}{2}$	Square	11	20
2	32.00	$\frac{3}{4}$ in.	9$\frac{1}{2}$	5	3$\frac{1}{2}$	No 2 Morse	33	50
3	50.00	1$\frac{1}{4}$ in.	12	5	4	No 3 Morse	50	75
4	80.00	2 in.	14$\frac{1}{2}$	6	4$\frac{1}{2}$	No 4 Morse	90	120



IMPROVED PATENT UNIVERSAL ANGULAR AND RACHET DRILLING MACHINES.

These Drilling Machines are now made of steel, and are first-class in all respects. For repair work in mills they are almost indispensable, as they can be attached to a broken machine without taking it apart, and swung around to drill at any angle. By placing the crank on the drill spindle, it will work with a ratchet or without. We send a chuck with each machine, which will hold $\frac{1}{16}$ to $\frac{1}{4}$ inch drills. One Twist Drill, $\frac{1}{4}$ inch, with $\frac{1}{2}$ inch shank, is sent with each machine. For $\frac{1}{4}$ inch drill, and all larger sizes, the $\frac{1}{2}$ inch shanks are recommended.

No. 1. Weight, 34 lbs. Drills up to $\frac{5}{8}$ inch hole, price each, $20.00
" 2. " 64 " " " 1 " " " " " 25.00
" 3. " 108 " " " 1$\frac{1}{2}$ " " " " " 40.00

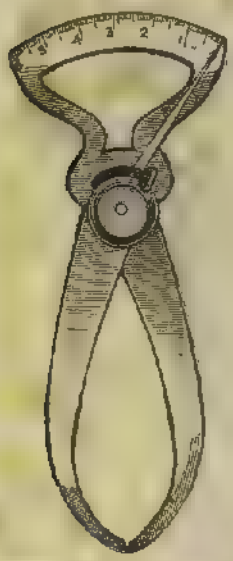
The No. 2 Drill has two sets of gears, making either speeded or geared back machine.

REGISTER CALIPERS.

For outside measurement, with Set Screw, Nickel Plated.

Cast Steel.

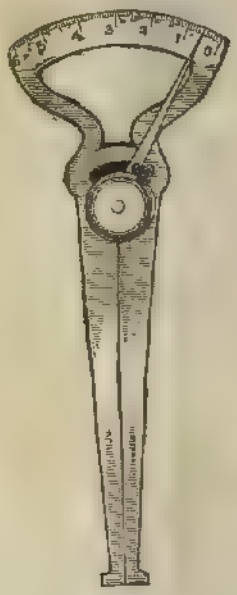
No. 4.



6 inch, per doz.....$12.00
8 " " 15.00

For inside measurement, with Set Screw, Nickel Plated.

No. 5.



Same sizes and prices as No. 4.

OUTSIDE AND INSIDE CALIPERS.

Cast Steel.

No. 6.

2½ 3 4 5 ..inch.
$4.90 5.25 5.60 6.00 per doz.

DOUBLE CALIPERS.

Cast Steel.

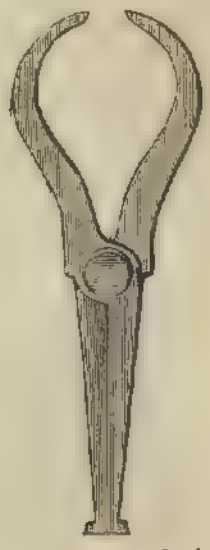
No. 9.

3½ in. long, per doz ...$7.50

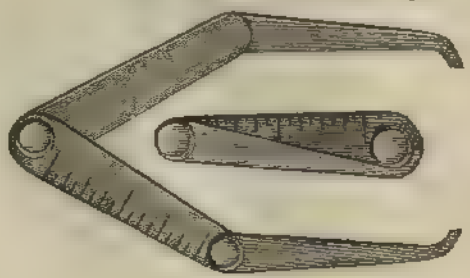
No. 10.

3½ in. long, per doz...$7.50

No. 11.



3 4 5 6 inch.
$3.40 4.75 5.50 6.50 per doz



FOLDING CALIPERS WITH RULE ATTACHED.

Per dozen.....$7.50

Length, 6 inches.

COOK'S PATENT EXTENSION DIVIDERS AND CALIPERS.

No. 4

This cut represents 6, 7, 8, 10 and 15 inch sizes with Caliper Points which can be substituted for steel points, which will answer for calipering all kinds of work, such as stair railing, where one leg should be extended further than the other, and will answer for calipering any hollow piece of work, such as bowls, and are used extensively by turners and machinists. Made of steel.

No. 2.

This cut represents 6, 7, 8, 10 and 15 inch sizes, each with double legs or extension points. The 10 inch becomes 15, and 15 becomes 20 by adjustment of the legs.

No. 1.

This cut represents 6, 7, 8 and 10 inch sizes, with one movable leg that can be lengthened or shortened as need requires, or can be substituted for the pencil when desired. The attachment that holds the leg or the pencil secures the leg firmly as easily adjusted, and is readily used.

	6	7	8	10	15 in.
Per doz., No. 2	$10.00	11.00	12.00	13.00	20.00
Each	.80	.90	1.00	1.10	1.65

Caliper Points, for 6, 7, 8 and 10 inch Dividers . . . . . per dozen, $6.00 Per pair $0.50
" " " 15 inch Dividers . . . . . " 12.00 " 1.00

Price of No. 1 Extension Dividers, $1.00 per dozen less than above.

WING DIVIDERS.

Length.	Best Quality. Per Dozen.	Length.	Ordinary. Per Dozen.
5 inch.	$7.00	5 inch.	$5.50
6 "	7.50	6 "	5.50
7 "	9.00	7 "	6.50
8 "	10.25	8 "	7.50
9 "	12.50	9 "	9.00
10 "	13.75	10 "	10.00
12 "	16.50	12 "	12.00
15 "	27.50	15 "	18.00
18 "	41.25	18 "	25.00

Kitchen Cupboards

72902 This Cupboard is made of solid oak front, with hard wood sides and finished as illustration, with exception front and glass doors, has one large and two small drawers; inside of upper and lower cupboards fitted with shelves; made of oak, richly carved and finished antique. Height, 7 ft. 3 in.; width, 4 ft. 4 in.; weight, 160 pounds. This style can be used for crockery or china closet, for dining room purposes. Very ornamental and well made.
Price, only..... $7.65

Kitchen Cabinet and Table.

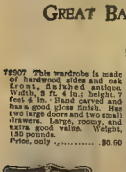
7266. There is no article of furniture that is more convenient or satisfactory for household use than this handy kitchen table and cabinet. From the illustration you will notice it contains two flour or sugar bins; one of them with two compartments, has two drawers partitioned off for spices; has two baking boards; each of the flour bins will hold 50 pounds of flour. This cabinet will save the house wife many steps. It is made of best hard wood, is well constructed and will last a life time; is nicely finished and is a valuable acquisition. No kitchen is complete without it.

The size of the top is 30x48 inches, the weight about 60 pounds. The retail price is $6.00. Our wholesale price

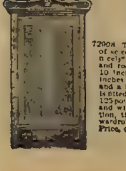
You can order table by express, rail or boat, as you wish, as it will not can be damaged in transit.

A fine line of cooking stoves and heaters listed in our stove department.

GREAT BARGAINS



72907. This wardrobe is made of hardwood sides and oak fronts, finished antique. Width, 3 ft. 6 in.; height, 7 feet 4 in. Handsomely carved and has a good glass finish. Has two large doors and two small drawers. Large, roomy and an extra good value. Weight, 180 pounds.
Price, only $6.60



72904 This Wardrobe is made of select ash and is richly carved and finished. Very large and roomy. Height 6 feet 10 inches, width 4 feet 2 inches has 2 large doors and a large drawer. This is fitted with hooks. Weight 125 pounds; extra good value and will guarantee satisfaction, this is the best cheap wardrobe on the market.
Price, only $6.75

Wardrobes—Continued.

72909 This wardrobe is made of select ash and the stock is beautiful, neatly carved and nicely finished. We will guarantee the doors of our wardrobes not to warp. Height 7 feet 9 inches, has 2 large doors with lock and 1 large drawer, inside is fitted with hooks, quite convenient and cheap. Weight 175 pounds. Price $6.75

72910 This is the best Oak wardrobe on the market for the money. Made of well seasoned stock and will last for years. Made of solid oak, richly hand carved and nicely finished. Height, 7 feet 2 in.; width, 3 feet 6 in. Has two large doors with locks and a large drawer. Inside is fitted with hooks. We can also furnish this wardrobe with mirrors in the doors if desired. This is extra good value at our price. Weight 192 pounds. Price, without mirrors ..... $ 9.50
Price, with 12x36 French bevel mirrors in the doors..... 13.95

72911 You know the best is always the cheapest in the end. We have nothing that is more durable and better made than this. Very large and roomy, made of select oak, handsomely carved and richly finished. Height, 7 feet 2 in.; width, 3 feet 9 in. Has two large doors fitted with locks and a large drawer. Inside is fitted with hooks. Weight, about 180 pounds.
Price $12.60

Revolving Book Stands.

For those desiring a larger assortment of revolving book cases we will send a special catalogue, upon request.

72915 Revolving Book Stand, made of solid oak, highly polished top, 10 inches square, 45 inches high. Shelves, 9 inches; 11 inches high. Holds 75 1000 volumes average size books. finished antique. Weight, 70 lbs. Price $6.25

72916 Hanging Book Rack or Cabinet, well made of bamboo, and has 3 strong shelves. Height, 36 inches, width, 18 inches, depth, 7 inches. Price, only $1.00

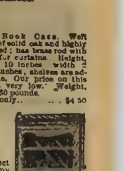
72917

72916

72917 Bamboo Book Rack well made and strong. Height, 48 inches; width, 24 inches; depth, 9 inches. Has 5 large shelves well braced.
Price $1.50
72917½ Same as 72917, except shelves and not quite so fancy.
Price $1.10

72918 Folding Book Case, made of solid oak, carved and polished. Height, 56 inches; width, 25 inches; depth, 10 inches. Has red with rings for curtain. Four shelves, fold and close automatically. Very handy and cheap. No screws or nails needed. Weight, about 20 pounds.
Price, without curtain $2.80
Our new special Furniture Catalogue contains a much larger assortment of book cases. We mail this catalogue for 5 cents, which pays the postage.

Book Cases—Continued.



72965 Book Case. Well made of solid oak and highly polished; has brass rod with rings for curtains. Height, 4 feet 10 inches wide 2 feet 10 inches, shelves adjustable. Our price on this case is very low. Weight, about 60 pounds.
Price, only..... $4.50

72967 Bookcase. Made of select quarter-sawed oak or mahogany finish and polished. Height, 5 feet 8 inches; width, 3 feet 1 inch. All shelves are adjustable. Well made and cheap. Quite large owing to the 5 shelves and top that can also be used for books. The stock in all our book cases is well seasoned and made by the finest cabinet makers. We will guarantee every case and further state they can be returned at our expense if not satisfactory. A good case for little money. Weight, 95 pounds.
Price, only $6.75

72968 This beautiful Carved Case is made of quarter-sawed oak or mahogany finish, and highly hand polished, and top is beautifully shaped, also ornamented with open lattice work in top of door. Has four large adjustable shelves, and a heavy base. Height, 5 feet, 4 inches; width, 2 feet 6 inches; depth, 15 inches. Extra well made and will guarantee satisfaction. Weight, 95 pounds
Price only..... $8.45

72969 Book Case, made of quartered oak, carved and highly polished. Height, 5 ft. 6 in.; width, 2 ft. 9 in. Has a French bevel mirror 22 in. top. All shelves are adjustable. We have contracted for a large number of this case, and are giving you a bargain, at price quoted. Well made and highly finished. Weight about 90 lbs.
Price, only..... $6.90

72970 Book Case. Made of select oak, richly hand carved and polished; height, 6 feet 6 inches; width, 3 feet 1 inch. Has a good 6x 16 French bevel mirror and a large shelf ornamented with brass railing on shelf; all shelves are adjustable, and contains one more shelf than shown in cut. Has 2 large glass doors fitted with lock. We consider this extra value at our price. Weight, about 100 pounds.
Price only..... $8.75

The Trinity of Therapy
ANALGESIC · ABSORBENT · ASSIMILANT
RHEUMAGON
A SPECIFIC FOR ALL RHEUMATIC CONDITIONS AND FIBROUS INFLAMMATIONS LUMBAGO, ARTHRITIS, AND ALLIED DISEASES ANTI SYPHILITIC ANTI SCORBUTIC ANTISEPTIC
POWDER LOCALLY IN LESIONS ULCERS SKIN DISEASES DUST OVER SURFACE IN INFLAMMATIONS USE WARM POULTICES OVER AFFECTED SURFACE
MELAGHOL
PROMPT PAINLESS PLEASANT LAXATIVE STRONG NERVINE ABSOLUTE ANESTHETIC ANTIDOTE TO MORPHINISM THE ONLY SUPPORTIVE ELIMINANT
TABLETS
THE MOST POWERFUL DIGESTANT OF ALL THE ELEMENTS ENTERING INTO THE ORGANISM, RELIEVES DYSPEPSIA, FLATULENCE, COLIC AND INTESTINAL DISORDERS CONVERTS PROTEIDS INTO BLOOD PLASMA, NOURISHES STRUCTURE CELLS AND FUNCTION
PHASELIN
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FORMULAE
RHEUMAGON, A COMBINATION OF THE IODIDES AND PHOSPHATES OF SODIUM
MELACHOL, A REDUCED CHEMICAL COMBINATION OF PHOSPHATES WITH NITRATES OF SODIUM
PHASELIN, THE DESSICATION OF PHASEOLUS THE EGYPTIAN AND MEXICAN VARIETY OF THE GENUS PHASELUS
described by Physicians as a Tonic has been possessing strong digestive powers, a strong supporter of function, a positive cure for the gastric catarrh of cholera, A general healing remedy of all local lesions, Ulcers and Eruptions, Asepsol as a poultice in all ophthalmic inflammations.
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THE THREE MOST VALUABLE CONTRIBUTIONS TO MODERN THERAPY COVERING MOST OF THE PATHOLOGIC CONDITIONS OF THE ORGANISM USED SUCCESSFULLY IN ALL HOSPITALS AND CLINICS
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RESINOL

℞. *Unguentum Resinol.*)

AN ABSOLUTELY RELIABLE ANTI-PRURITIC, LOCAL ANTIPYRETIC EMOLLIENT AND SKIN NUTRIENT

RESINOL, by promptly discipating capillary hyperæmia, has established itself as the best local application in Erysipelas and other forms of Dermatitis, and as the remedy *par excellence* in all eruptions and irritations of the skin, as *Eczema, Herpes, Acne, Psoriasis, Sudoriparous, Tinea Capitis, Intertrigo, Sunburn, Eruption of Poison Oak, Burns and Scalds, etc.* Stops the itching of *Pruritus Ani* or *Vulvæ, Itching Piles, Marginal Eczema, etc.*, instantaneously, and immediately subdues the fiery inflammation of *Vulvitis, Balanitis, etc.*

RESINOL is a harmless antiseptic and a true skin anæsthetic, absolutely non-irritant and non toxic (free from lead, mercury or cocaine), can be applied to mucous, excoriated or denuded surfaces of any extent at any age without fear of untoward results, and is not contra-indicated by any internal medication that may be deemed advisable

OPINIONS FROM THE PROFESSION

From F. V. C. Fuller, M. D., 20 St. James Place, Brooklyn, N. Y.: Six years ago I first used Resinol, for which I have had the highest appreciation, in a case of Herpes Zoster. The effect was magical, it gave instant relief of pain, reduced the size of the lesion in a few hours, total obliteration after third application in less than sixteen hours

From J. K. Maloy, M. D., Temperance, Ga.: I have been using Resinol in a case of eczema, of long standing, which affected the penis and scrotum. The patient thought he had syphilis and spent considerable money and time with a specialist who agreed that his case was specific. Three jars of Resinol has cured him completely. It has gained my confidence and I shall continue to prescribe it where indicated

From J. Wood, M. D., Thomasville, Mich.: I have been active engaged in the practice of medicine for 35 years and never gave you a testimonial before, my approval. But having been a terrible sufferer from Pruritus Ani for the last 15 years, and having tried every known remedy without success I ever since then have used Resinol and am well pleased with it for all irritations, yet it is. The first application was instantaneous, and a cure effected in a few days. I cannot say too much in praise of this most excellent and effective remedy

From J. O. Holmes, M. D., Cranberry, N. J.: Resinol, the greatest discovery of the age, will do all you claim for it. I have used it with marked success in a number of very obstinate cases of skin diseases. I also completely cured myself of Pruritus Ani, a most distressing malady that never yielded to any other treatment, although I had used everything I ever heard or read of.

From Lucy Hall Brown, M. D., Brooklyn, N. Y.: I frequently prescribe Resinol and am well pleased with its work. It has proved very useful in many forms of eruption of the skin, and especially so in Pruritus Vulvæ or Ani and in Eczema of other parts of the body

RESINOL IS PUT UP IN ONE OUNCE JARS AT 50 CENTS EACH, AND CAN BE OBTAINED AT ANY DRUG STORE.

SAMPLE SENT FREE ON APPLICATION, OR ONE REGULAR SIZE JAR FOR TRIAL ON RECEIPT OF 25 CENTS.

Resinol Chemical Co.

BALTIMORE, MD.

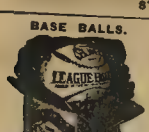
Please mention THE ALKALOIDAL CLINIC when writing.

INTERNATIONAL SUPPLY DEPT. PUBLISHING CO.
Chicago Ill. TRADE MARK Philadelphia Pa. 19

BASE BALL AND SPORTING GOODS.

STANDARD GOODS AT ECONOMY PRICES.

BASE BALLS.



No. 1. Genuine Spalding League Ball. The official base ball adopted by the National Association of Base Ball Players. Warranted to last a single game; a little or longer according to the quality of the men that use it. Each.....$1.25

No. 2. Spalding Official Boys League Ball. Regulation size, but not of the same quality as the only satisfactory ball made; each.....75

No. 3. Spalding Double Seam Ball. Double seam and three ply yarn wound; a good ball at a low price; is not an Official League ball and of just the same quality as our $1.25 ball; each.....1.10

No. 4. Professional Ball. Regulation size, weight and make that will give very large satisfaction; a ball that is used by many professional clubs. Special price.....75

No. 5. Boys' Professional Base Ball. Same as above, but of one size smaller; a ball of wonderful wearing qualities, and one that retails at twice our price. Our price.....45

No. 6. Amateur Ball. A ball that has had a very large sale with us. Has fine worsted cover and is regulation size. Special price.....68

No. 7. "King of the Diamond." Regulation size and weight. Is a first-class cheap base ball; our sold. Special price.....38

No. 8. "Boys' Favorite." Regulation size ball with extra fine bladder; a good ball that will stand a great deal of usage. Retails at 50c. Special price.....32

No. 9 League Junior Base Ball. Well made with fine horsehide cover and hand sewed; slightly under regulation size.....20

No. 10. "Bonnet." A very lively and fast bouncing ball; unusually well made of select material; our.....18

No. 11. "Victor Ball." Regulation size; a good, fast bouncing ball; material and workmanship of the cheap ones which are sold by peddlers.....14

No. 12. Boys' "Amateur" Ball. A little under the regulation size, but a splendid ball for the money. Sold ordinarily for 30 to 35c. Special price.....18

All of the above in separate box and sealed. Postage extra.

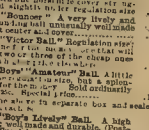
No. 13. "Boy's Lively" Ball. A high bounder; well made and fully warranted. Special price.....06

No. 14. "Rocket" Ball. The best ever where at twice the price. (Postage 5c.) Special price.....06

No. 15. "Dandy" Ball. Made with a strong rubber center and good cover.....04

No. 16. "Boss" Ball. A good one to knock around in; is worth three times our price. By mail or by express.....03

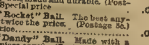
BASE BALL BATS.



No. 17. Genuine League Model Bats. Made of finest, specially seasoned timber all finish. Each the finest and best balanced bat made and will stand harder usage than any other bat on the market. Length, 33 34, 35 and 36 inches. Each bat in a separate bag. Regular retail 50; our price.....78

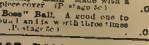
No. 18 Boys' Model League Bat. Same quality as Finish as above. Length, 30 and 31 inch.....75

No. 19. Spalding's Black End Wagon Tongue Bat. Genuine league quality; made of finest straight grain hickory. Handle is roughened by a patent process, for a better grip.....60



No. 20. Spalding's Black End "Axletree" Bat. Made of finest straight grain hickory; very fine finish; perfect balance; ideal for practicing like the pros, and is used by many amateur and professional clubs.....40

No. 21. Spalding's Black End "Antique" Finish Bat. Made of extra quality ash, very strong and well made.....20



No. 22. Spalding's Black End Willow Bat. Very fine finished with shellac finish; is very light and strong.....90

No. 23. Spalding's Black End Boys' Axletree Bat. Very fine extra quality ash; light and handy. A special model that will please lots satisfactorily.....35

No. 24. Spalding's Black End Youth's Maple Bat. Handled and finished like our full size bats; a fine extra value and worth double the price.....90

No. 25. Spalding's Black End Boys' Maple Bat. Finished with gilt stripes. A dandy bat for a few pennies.....10

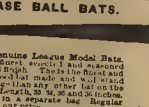
.....04

BASE BALL MITTS.

Our stock includes all kinds, Catchers, Basemen's, Infielders Mitts, as well as Infielders' Gloves, all of the very best that can be made. Special inducements to clubs purchasing a dozen or more at one time. Our terms on all orders of $5.00 or more are very liberal. C. O. D., subject to examination of one-fourth of order.

SPALDING'S CATCHERS' MITTS.

All four Mitts are furnished for either the right or left hand. The left Hand Mitts always cost more unless otherwise ordered. No Throwing Gloves furnished with any of our Mitts this season.

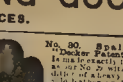


No. 26. Bassmen's Mitt. Each one bearing the trade-mark of our highest quality goods is a sufficient guarantee of its excellence. The finest selected glove in all its details that our past experience can produce. The finest selected pigskin for facing and back of fingers and thumb, padding and workmanship complete in all the features of the best and the most satisfactory catchers' mitts. Made in.....$3.50

No. 27. The "Morrill" Mitt. Is after the design of the above, but is not quite so large; is a particularly popular pattern; very well padded; has patent lace back. It is not as heavily padded as the above, but is a very satisfactory mitt for the money. An extremely good fitting mitt. Made in right and left.....2.12

No. 28. League Mitt. Is the best throughout of specially tanned and selected horsehide; has a large and roomy back, at the same time being very soft and pliable. It has our patent lace back and is heavily padded. Made in right and left.....3.75

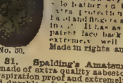
No. 29 The Spaulding Mitt. Face, sides and fingers are made of velvet tanned deerskin and the back of fine hogskin, making an exceedingly easy fitting and durable mitt. It has our patent lace back and is well padded. Made in rights and lefts.....2.12



No. 30.

No. 30. Spalding's Each "Decker Patent" Mitt. It is made exactly the same as our No. 29, with the addition of a patent lace back for the fingers, extending back for extra protection to the hand and fingers as shown in cut. Also has patent lace back and is extremely well padded. Made in rights and lefts, 2.50

No. 31. Spalding's Amateur Mitt. Is made of extra quality asbestos buck, perspiration proof and extremely tough and durable. It has our patent lace back, reinforced at thumb, and well made and padded. Made in rights and lefts.....1.65



No. 32.

No. 32. The Spalding Practice Mitt. The face and finger piece are of black horsehide, and the back of fine soft leather, with a strip of canvas across it. It has a patent lace back and is padded and well padded. Made in rights and lefts.....75

SPALDING'S BOYS' CATCHERS' MITTS.

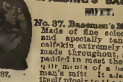
No. 33. Spalding's "Decker Patent" Boys' Catchers Mitt. Face, strip and finger piece made of velvet tanned deerskin, back of fine soft, tough, soft and perspiration proof. The finger piece of this mitt is made after the Spalding protection to hand and fingers. It has the patent lace back and is extra well padded. Made in rights and lefts.....1.60

No. 34 Spalding's Boys Mitt. Face and finger piece of mitt made of dark tanned leather, the back and adjustable strap of light tanned leather. It has thumb and back well padded and stuffed and is furnished in rights and lefts, and has the patent lace back. Made in our regular Boys' Mitt.....1.00

No. 35. Spalding's Boys' Mitt. Front and finger piece of this mitt are made of dark brown tanned asbestos leather, the back and edge of the mitt is made of extra well padded and tastefully finished brown leather. Has the patent lace back. Made in rights and lefts.....80

No. 36. Spalding's Boys Mitt. Front and back made of extra tanned asbestos buck, well stuffed, light tanned leather, well made and shapely. Has the patent lace back and is furnished in rights and lefts.....90

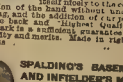
SPALDING'S BASEMEN'S MITT.



No. 37.

No. 37, Baseman's Mitt. Is a carefully selected and specially tanned calfskin glove, well made throughout, and padded to meet the require ments of a baseman's mitt. It adapts itself readily to the conformation of the hand without undue strain, and the addition of our patent lace back and finished padding is the quality and merits. Made in rights and lefts.....2.00

SPALDING'S BASEMAN'S AND INFIELDER'S MITTS.



No. 38.

No. 38. Mitt. Made of the very best and softest light tanned leather, with thumb and at wrist are extra well padded with the highest quality felt, making it a very safe and comfortable mitt, combining with strength and durability. The mitt throughout is of the best workmanship, as instructed by our "Highest Quality" trade mark. Made in rights and lefts.....2.50

INTERNATIONAL SUPPLY DEPT. PUBLISHING CO. TRADE MARK
Chicago Ill. Philadelphia Pa.

BASE BALL MITTS—Continued.

No. 39. Spalding's Basemen's and Infielder's Mitt. Is constructed throughout of velvet tanned deerskin and edges grayson bound. It is well padded with fine felt and carefully sewed and finished. Made in rights and lefts ..... Each $1.80

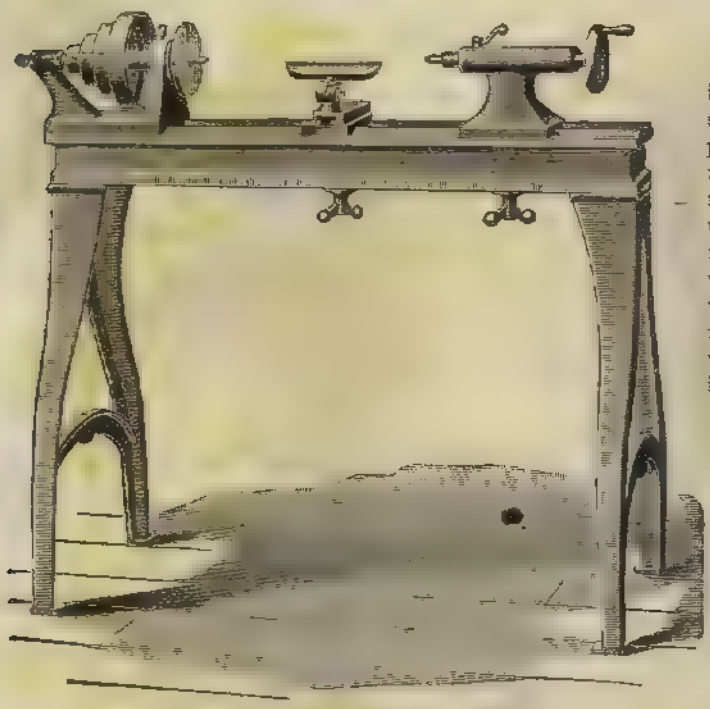
No. 40. Spalding's Basemen's and Infielder's Mitt. Made of good quality suede leather, nicely padded, and constructed throughout in a most substantial manner, making an exceedingly good mitt at a popular price. Made in rights and lefts ..... .85

No. 41. Spalding's Boys' Basemen's Mitt. Made throughout of a good dressy leather. It is well padded and makes a good and substantial mitt for boys. Made in rights and lefts ..... .40

INFIELDERS' GLOVES.

No. 42 Infielder's Glove Made from fine [illegible] Each [illegible] [illegible] [illegible] [illegible] trade mark "Highest Grade" and also [illegible] the glove in pocket. This is one of our finest decalls. Made in rights and lefts. 2.80

No. 43 Spalding's Infielders Glove. [illegible] [illegible] [illegible] [illegible]



SPENCER HAND LATHE.

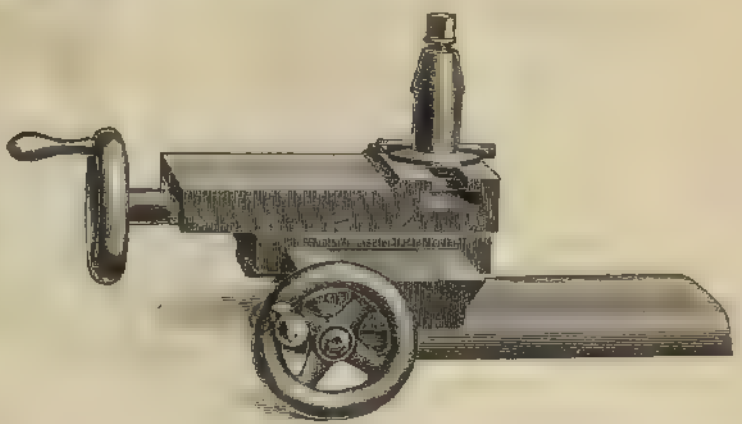
This lathe has an improved conical cast-iron bearing, which is forced upon a steel spindle, making the spindle and bearing practically one; the spindle runs in gun metal boxes and has easy means of adjustment. The workmanship and material used, are strictly first-class. There are more than 1,000 of these lathes in use, which is conclusive proof of their merit, and there is no limit to the speed at which they may be run. This lathe can be furnished with lever movement of tail stock spindle, in 11 in. size without extra charge.

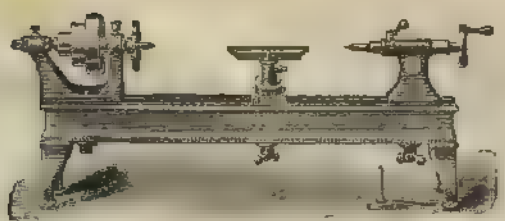
11 in. Swing, 4 ft. Bed, ½ in. hole through spindle	$ 65.00
12 in. Swing, 52 in. Bed, ⅞ in. hole through spindle ..	85.00
12 in. Swing, 6 ft. Bed, ⅞ in. hole through spindle.....	95 00
14 in. Swing, 52 in. Bed, ⅞ in. hole through spindle ..	100.00
14 in. Swing, 6 ft. Bed, ⅞ in. hole through spindle	110.00

SPENCER SLIDE REST.

A Superior Tool in every particular.

11 in. Swing.....	$35.00	Each.
12 " "	36.00	"
14 " "	40 00	"



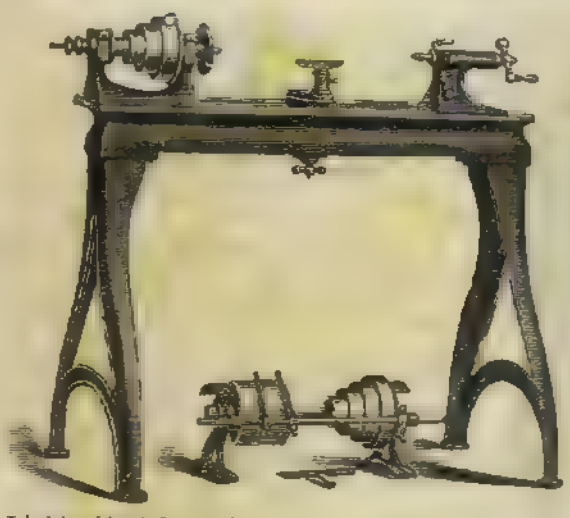


THE SPENCER SPEED LATHE.

This lathe was designed to supply those who want an extra fine built small Lathe. Especially adapted for light brass and all hard rubber work. They are fitted with the Spencer patent hard open grain cast-iron taper shell bearings, running in gun metal box in front. The back end of steel spindle is tapering and hardened, and is fitted to an independent adjusting cast-iron step For a fine adjustment this step is fitted with a screw separated from the spindle by two buttons, made of steel and hardened. This combination gives accuracy of position with large wearing surface, while the open iron bearings take up and hold the lubricator reducing the friction to a low point. The superior work in construction and excellence of design, make this Lathe a superior tool for either metal or wood. They can be run at a high speed without heating, and with uncommon truth and smoothness. Carried in stock either with lever feed to the tail stock spindle or screw feed as in cut.

Swings.....	8	inches.
Length of Bed.....	30	"
Takes in between Centers.....	16½	"
Hole through Spindle.....	¾	"

Price, including countershaft, $40.00.



YOUNG'S HAND LATHES.

Back Geared Hand Lathes. We have pattern for Back Geared Hand Lathes of 12, 14 and 16 inch swing; add to price of Hand Lathes for 12 inch swing, $15; 14 inch swing, $25; 16 inch swing, $30.

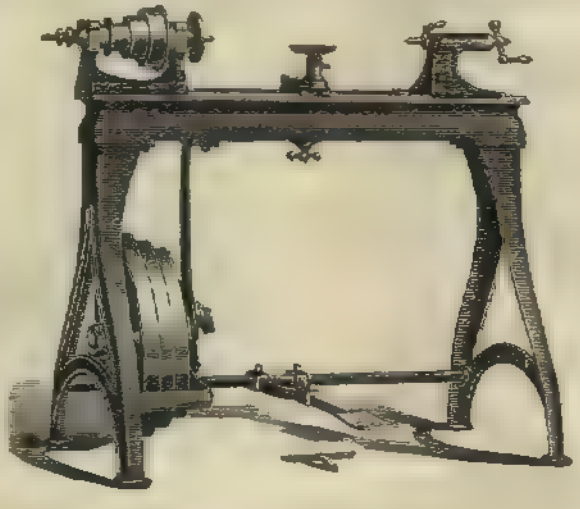
L'n'th of bed, ft.	3¼	4	5	6	4	5	6	7	8	5	6	7	8
Swing, inches,	10	12	12	12	14	14	14	14	14	16	16	16	16
Dist. between Centers....in.	24	28	40	52	22	34	46	58	70	34	46	58	70
Each.....	$65 00	80 00	83 00	86 00	115.00	118.00	121.00	124 00	127.00	130 00	134.00	138 00	142.00

YOUNG'S FOOT POWER HAND LATHES.

Length of Bed, feet,	3¼	4	5	6
Swing.....inches,	10	12	12	12
Dist. bet. Centers in.,	24	28	40	52
Each.....	$75.00	92.00	95.00	100.00

Back Gears for 12 inch Lathe, extra.....$15.00

We will furnish a countershaft instead of the foot motion, when so desired, without extra cost When both countershaft and foot motion are ordered, the price will be $10.00 more.



WOOD-TURNING LATHES.

This cut represents our wood-turning lathes, which are designed to be used with wooden shears. They are made very heavy, and the workmanship is of the best quality. The bearings are large and fitted by scraping. The cone pulley on the head spindle is reversed for greater convenience in doing many kinds of work, and no pains have been spared to make them a strong and reliable tool. They are made in the following sizes, viz: 10, 12, 14, 16, 18, 20, and 24 inch swing. The 16, 18, 20 and 24 inch are also made with a solid face plate for pattern makers' use. The countershaft is fitted with a belt shifting attachment complete for starting or stopping the machine. The 10 and 12 inch have a three step iron cone; pattern makers' machines have a four step cone, and the balance of the other sizes have a four section cone, the small section being iron, and the others of hard wood with iron flanges at both ends keyed to the spindle.

Wood-Turning Lathes.

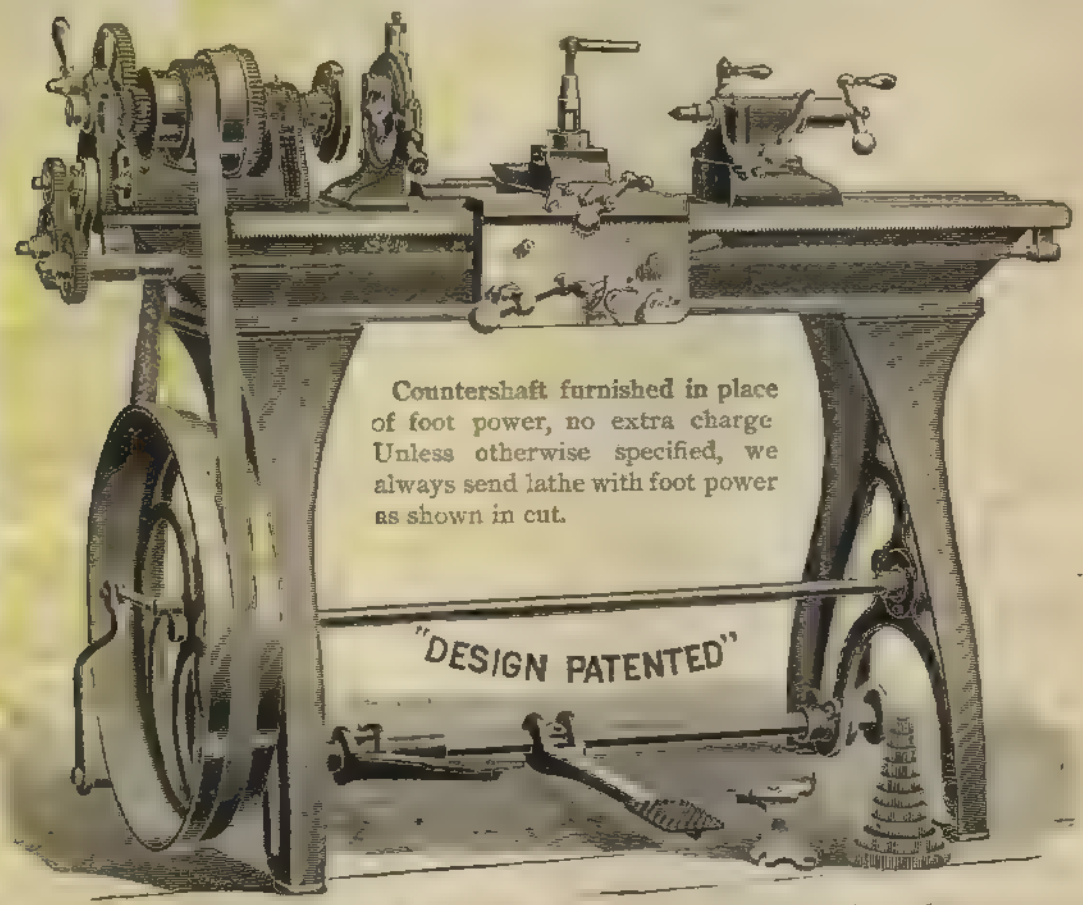
Inches.....	10	12	14	16	18	20	24
Each.....	$50 00	60.00	70.00	80 00	95.00	110.00	125.00

Pattern-Makers' Lathes.

Inches.....	16	18	20	24
Each.....	$110.00	125.00	135.00	150.00

Prices for Wood or Iron Beds on application.

STAR LATHE—1896 MODEL—11-INCH SWING.


Countershaft furnished in place of foot power, no extra charge Unless otherwise specified, we always send lathe with foot power as shown in cut.
"DESIGN PATENTED"

This Lathe has been entirely remodeled and designed and is now about as complete and accurate a tool as there is on the market. It has a broad, heavy solid bed and all other parts being proportionately heavy will take work to its full capacity without trembling or jarring. This Lathe is as large as is practical to operate regularly by Foot Power, but when greater capacity is desired for any special work, the "*Blocking*" may be successfully used; the Blocking can be easily *put on* or *taken off* and therefore the Lathe can be used in its *normal* shape for all ordinary work. Cone pulley has three sections, 4-in., 5-in. and 7-in. diameter respectively for 1½-in. Belt. Plain Gib Rest. Compound Rest can be supplied at $20.00 extra. Both Automatic Cross and Longitudinal Feeds, which may be thrown in or out of contact by simply turning a Hand Nut in the Apron, and will feed in or out, right or left, cut screws right or left, or may be thrown out of gear entirely by moving a lever in the head stock, without changing the motion of the foot or driving power.

SPECIFICATIONS.

HEAD. Spindle is made from a Crucible Steel Forging 1⅝-in. diameter, and has ¾-in. hole through it. Bearings are Phosphor Bronze. Cone pulley has three (3) sections 4-in., 5-in. and 7-in. diameter, respectively, for 1½-in. Belt. Ratio of Back Gearing is 6 to 1, with Cone Pulley and Back Gears, gives six changes of speed. Swing over Bed 11-in., over Rest 6¾-in.

TAIL. Spindle of Steel 1¼-in. diameter, arranged with Self-Discharging Center; also an improved Spindle Locking Device which insures perfect alignment. Tail Stock is provided with an adjustable Side Movement for Turning Tapers, has a bearing of 7½-in. on the Bed, and is rigidly held in position by a Cam Locking arrangement.

REST. Plain Gib Rest the *strongest, most rigid* and *practical* for general use, on a Lathe of this size. Compound Rest is furnished as an Extra Attachment. Tool Post is provided with an Improved Collar and Shoe for raising and lowering the Tool. Carriage is strongly Gibbed to the Bed both front and rear, and has a Clamping Device for Locking it to the Bed when using the Cross-Feed.

FEED. Our *Improved Automatic Friction* Cross and Longitudinal Feeds are actuated by a *Phosphor Bronze Worm* on the *Lead Screw* which is *spiral* and for all work except screw cutting is simply acts as a Feed Rod, and therefore the only wear is in its threads is in *screw cutting*. The *Feed* may be thrown *in* or *out* of *contact* by simply turning a *Hand Knob* in the Apron, and will feed in or out, right or left, cut screws right or left, or may be thrown out of gear entirely by moving a lever in the *Head Stock*, without changing the motion of the foot or driving power. The *Cross-Feed* will be found valuable in a large variety of work, as it secures perfect accuracy in turning or facing up work, and with the addition of simple fixtures, which can be made by any ordinary workman, *light milling* may be done. The *Lead Screw* is Steel, 6 *Pitch U. S. Standard Thread*, and is provided with an *Open* and *Shut Nut*, which is thrown in or out of contact by means of a *Cam Lever* in the *Apron*. It will cut all Standard threads, from 3 to 64, inclusive, without compounding the gears, and nearly all threads by compounding them. If desired, can be furnished with *Special Lead Screw* (and Gears) for cutting *Metric Threads*, at same price.

FOOT POWER. Consists of Double Treadles, with a walking motion; the treadles are movable and work independently of each other, each being connected at opposite ends of the Driving Wheel Shaft in such a manner

as to produce a strong, positive and continuous power. It can be started or stopped instantly, and may be operated with both feet sitting, or with one foot standing, as desired.

All small parts liable to be bruised are *case-hardened*. Each Lathe is provided with a Center Rest, Follower Rest, 2 Point Centres, a full set of Change Gears, Wrenches, and everything complete, as shown in cut.

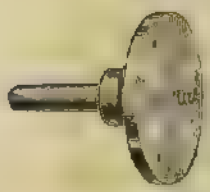
PRICES, ETC.

Number.	Swing Over Bed.	Distance Between Centres.	Length of Bed.	Weight.	Price with Foot Power.	Price with Countershaft.
30	11 inches	36 inches	61 inches	600 pounds	$150 00	$150 00
40	11 inches	48 inches	73 inches	650 pounds	160 00	160 00
50	11 inches	60 inches	85 inches	700 pounds	170 00	170 00

Blocking to raise *Head* and *Tail Stocks* and *Tool Post* to make swing 15 inches..... $15.00
This Blocking should be *fitted* to the *Lathe* before it leaves our Factory.
Unless otherwise specified, we will send Lathes with *Foot Power*, as shown in cut

WOOD TURNING TOOLS.

With Hardwood Handles.



1 each ⅜ and ½ Turning Gouges,
1 each ¾ and 1 Turning Chisels, } Price, per set of 4 Tools. $1 50

	For 10-inch Crown Lathes.	For 9-inch "Star" Lathes.	For 11-inch "Star" Lathes.
Screw Chuck	$1 50	$1 50	$2 00
Crotch Center	1 50	1 50	2 00
Drill Pad	1 50	1 50	2 00
Point Center	1 00	1 00	1 50
Cup Center	1 00	1 00	1 50
Spur Center	1 00	1 00	1 50
Large Face Plate, 9-inch diameter	3 50	3 50	11-inch diam. 5 00

THE "STAR" FRICTION COUNTERSHAFT.

Patented.

The Pulleys on No. 9 Countershaft are 6 inches in diameter for 1¼-inch Belt, and should make 200 revolutions per minute.

The Pulleys on No. 11 Countershaft are 8 inches in diameter for 2-inch Belt, and should make 200 revolutions per minute.

PRICES.

No. 9 "Star" Countershaft for 9-inch "Star" Lathes..... $10 00
No. 11 "Star" Countershaft for 11-inch "Star" Lathes..... 15 00

RULE FOR GEARING "STAR" LATHES FOR SCREW CUTTING.

Multiply the pitch of both the Lead Screw (which is 12) and the Screw to be cut, by the same number—no matter what it is so long as the product comes within the range of the Gears on the Index.

For illustration: Suppose we want to cut 15 threads per inch. Example: 15 x 2—30. 12 x 2—24.

Put the 30 Gear on the Lead Screw, and the 24 Gear on the Feed Stud, and any Gear on the Intermediate Stud that will connect the two first

Another example for 15 threads per inch: 15 x 4—60. 12 x 4—48.

"STAR" HAND REST.

For Wood Turning.

While the "Star" Lathes are specially designed for working metals, they can be speeded high enough for *Wood Turning*. To do this work successfully a Hand Rest is desirable. With the "Star" Hand Rest, we furnish two **T** Rests, one short and one long, as shown in cut.

PRICES.

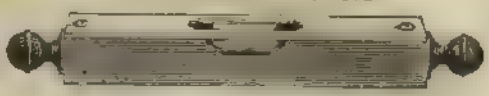
No. 9 "Star" Hand Rest for 9 inch "Star" Lathes..$2.50
No. 11 " " " " 11 " " " .. 3.50

PLUMBS AND LEVELS.

Nickel-Plated Pocket Levels.

New Pattern. No. 0, 2½ inch.

Iron Pocket Levels.



No. 14, 3 inch.

Iron Pocket Levels, for Square or Straight Edge.

No. 17, 3⅜ inch.

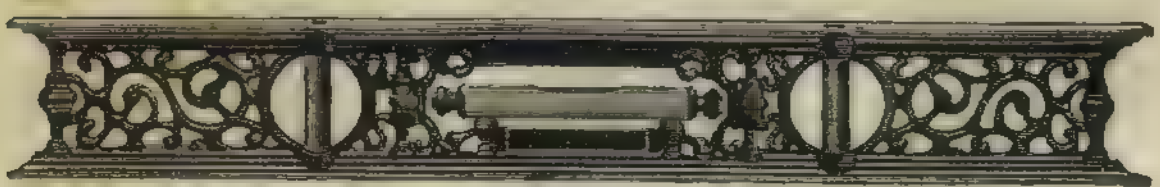
Machinists' Adjustable Levels, Plumbs, and Inclinometers.

No. 1, 6 inch.

No. 2, 12 inch.

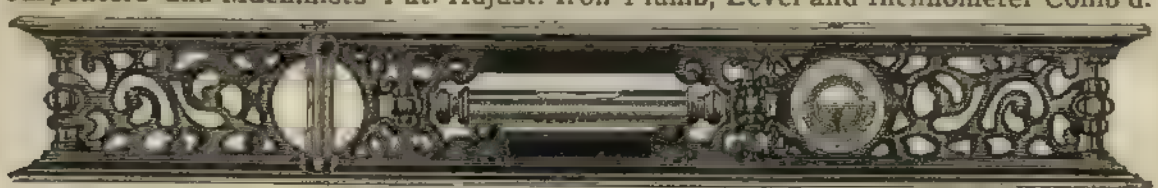
Carpenters' and Machinists' Adjustable Double Plumbs and Levels.

No. 8, 18 inch.



No. 9, 24 inch.

Carpenters' and Machinists' Pat. Adjust. Iron Plumb, Level and Inclinometer Comb'd.



No. 09, 24 inch.

Pocket Levels.

No. 14, 3	inch, Japanned			per doz.,	$2.50
" 15, 5	"	"	.....	"	3.50
" 17, 3	"	"	.....	"	3.00
" 0, 2½	"	"	Brass Plated	"	3.00
" 00, 3	"	"		"	3.60
" 000, 3½	"	"		"	4.20

Machinists' Adjust. Levels, Plumbs & Inclinom.

No. 1,	6 in.	Machinists' Iron Level,		p.doz.,	$24.00
" 2, 12	"	"	"	"	30.00
" 3, 18	"	"	"	"	36.00
" 4, 24	"	"	"	"	42.00

Carpenters' Adjustable Double Plumbs & Levels.

No. 6,	6 in.	Carp'ters' Iron Level,		p.doz.,	$24.00
" 7, 12	"	"	"	"	27 00
" 8, 18	"	"	"	"	30.00
" 9, 24	"	"	"	"	36.00
" 09, 24	"	"	"	"	72.00

Machinists' Adjustable Iron Bench Levels.

No. 10,	4 in.	Iron Bench Level..		per doz.,	$6.00
" 11, 4	"	"	"	"	8.00
" 12, 6	"	"	"	"	9.00

STRATTON'S LEVELS.

The cut represents No. 2 Adjustable Plumb and Level. The corners are protected from injury and preserved true and perfect by Brass Rods extending the entire length of the Level, securely attached to the wood. These Levels have two ornamental Brass Lipped Side Views, heavy Brass Top and end plates, and are made of the best thoroughly seasoned Mahogany and Rosewood, polished.

PRICES.

No. 12. Machinist's Level. The Machinist's Levels have Brass Views, heavy Brass Top and End Plates, and Brass Corners. Rosewood, Polished.

6 inch, without Plumb	Each	$1.10
8 " with "	"	2.00
10 " " "	"	2 40
12 " " "	"	2.60

No. 1.

	Rosewood.	Mahogany.
22 inch	Each $6.50	$4.70
24 "	" 7.00	4.85
26 "	" 7.25	5 00
28 "	" 7.60	5 15
30 "	" 8.00	5 40

No. 2. Patent Adjustable Mahogany Plumb and Level, 2 ornamental Brass Lipped Side Views, heavy Circular End Top Plate, Tipped, Polished, 26, 28 and 30 inch ..... Each $3 60

No 3 Is like No. 2, with Tips like No. 4; 26, 28 and 30 inch ..... " 3 00

No 4.—Patent Adjustable Mahogany Plumb and Level, two Side Views, heavy Circular End Top Plate, Tipped, Polished, 26, 28 and 30 inch ..... " 2 10

No 5.—Patent Adjustable Cherry Plumb and Level, two Side Views, heavy Circular End Top Plate, Polished, 26, 28 and 30 inch ..... " 1 50

No. 6 Mason's Patent Adjustable Mahogany Plumb and Level, two ornamental Brass Lipped Side Views, heavy Circular End Top Plate, Polished, 36 inch ..... " 3 25

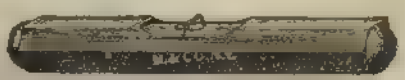
No 7. Mason's Level Mahogany Adjustable Level and Plumb, two Side Views, heavy Circular End Top Plate, Polished, 36 inch ..... " 2.50

No. 8.—Mason's Level Cherry Adjustable Level and Plumb, two Side Views, heavy Circular End Top Plate, Polished, 36 inch ..... " 2 00

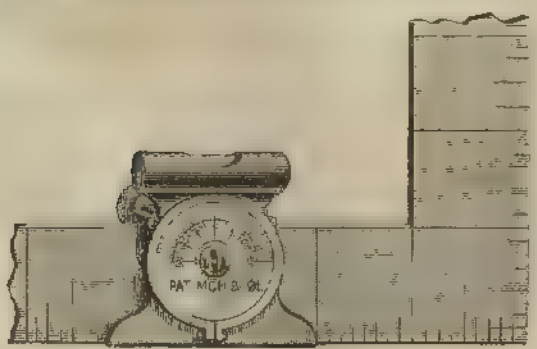
No 11 Pocket Level Brass Embossed and nickel-plated 6 in long, ⅞ in square. " 1.50

FULTON POCKET LEVELS.

This Pocket Level is a most convenient tool for many purposes. Of hexagon shape and nickel plated.



2½ inch	Per Doz.	$3.00
3 "	" "	3.60
3½ "	" "	4.20
4 "	" "	5.50
5 "	" "	6.00

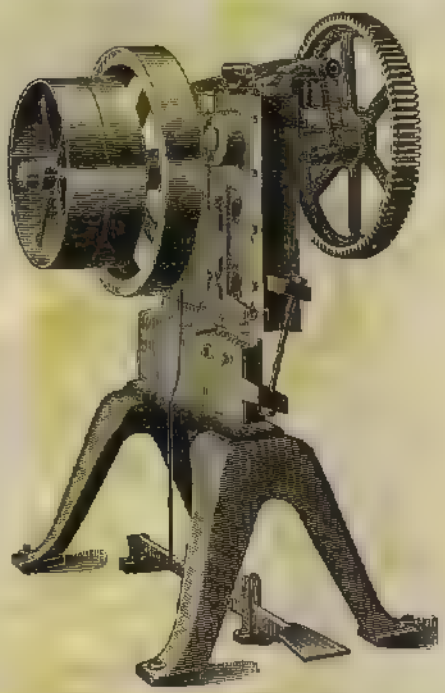


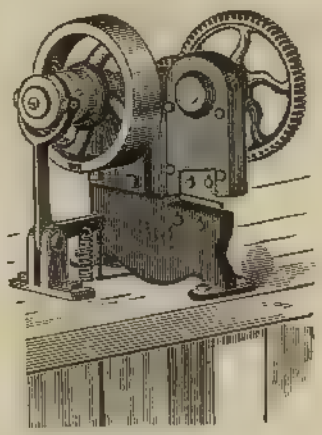
THE UNIQUE POCKET LEVEL.

As applied to a steel Square, Tri-Square, Straight Edge, Steel or Wood Rule for a level, or by turning the level, the graduated disk will show by degrees any angle. Also by means of the V bearing and set screw on the reverse side, the tool is readily attached to an auger bit or drill, accurately gauging the angle of the hole in boring or drilling.

Brass	Each, $	.75
Nickel-Plated	"	1.00

TAFT'S GEARED SHEARS.





No 31.

Made in 8 sizes. Cutting plate iron from $\frac{1}{8}$ to $\frac{5}{16}$ of an inch in thickness. All sizes, except No. 31, have the automatic start and stop motion; also the tie bolt.

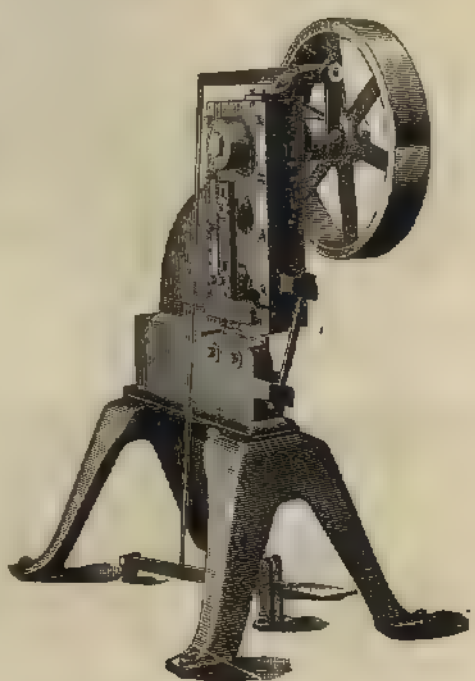
N. B. Always have the hold down bear on the stock when cutting off or slitting.

Nos 36, 37 and 38 require two boxes. No discount allowed on boxing.

No. of Shear	31	32	33	34	35	36	37	38
Each	$ 70	105	155	240	340	470	575	750
Weight, about, lbs	100	300	475	600	975	1400	1600	1900
Thickness of Iron will slit or cut, inches	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$
Length of blades, in.	3	4	5½	7½	8½	9½	9½	10
Diameter of balance wheel, in.	12	14	17	21	25	28	30	30
Width of balance wheel, in.	2¼	3	3	3¼	4	4	5	5
Diameter of T and L. pulleys, in.		10	12	16	18	20	22	24
Width of pulleys, in.		2½	3	3	3½	3½	4	4
Speed of pulleys, per minute	280	280	300	300	300	250	250	240
Ratio of gearing	1:4	1:4	1.5	1:5	1.5	1:5	1.5	1:6
Net extra for boxing	$1.00	2.50	2.50	4.00	4.00	6.00	6.00	6.00

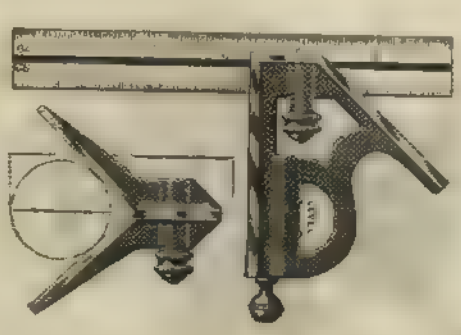
TAFT'S POWER SHEARS, NOT GEARED.

Made in 8 sizes. Cutting stock from $\frac{1}{8}$ to $\frac{5}{16}$ of an inch in thickness. No. 21 is made without legs, to be used on a bench. We make this machine to order, with the cam shaft extended through so as to attach the regular hand lever, making it capable of use by either hand or power, at an extra cost of 10 per cent. We rate these machines at what they are capable of doing by hand. For use with a belt, we do not recommend them to perform over one-half the rated duty. All sizes, except No. 21, have the automatic start and stop motion; also, the tie bolt.



No. of Shear	21	22	23	24	25	26	27	28
Each	$ 30	50	80	110	150	210	260	320
Weight, about, lbs	75	225	400	550	800	1200	1400	1700
T'kness of pl't iron will slit or cut, in	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$
L'gt. of blades, in.	3	4	5½	7½	8½	9½	9½	10
Diam. of balance wheel, in.	12	14	17	21	25	28	30	30
Width of balance wheel, in.	2¼	3	3	3¼	4	4	5	5
Rev. per minute	70	70	70	60	60	50	50	40
Net ex. for boxing	$1.00	2.50	2.50	4.00	4.00	6.00	6.00	6.00

STARRETT'S PATENT COMBINATION SQUARES, No. 11.



Every tool warranted accurate. With the adjustable scale this forms one of the most convenient and useful tools ever devised for mechanics' use. One is a complete substitute for a whole set of ordinary squares, and is one of the best gauges ever made for transferring exact measurements or laying out work. It is also convenient for a depth gauge, or to square in a mortise. For a miter it is perfect, while with the auxiliary center head it forms a centering square, both inside and outside, which for convenience and accuracy has no equal.

4	in.,	without	center	head	or	level				$1.00
6	"	with	center	head			$2.00,	without	center head,	1.50
9	"	"	"	"			2.50,	"	" "	1.75
12	"	"	"	"			3.00,	"	" "	2.25
18	"	"	"	"			3.75,	"	" "	3.00
24	"	"	"	"			4.25,	"	" "	3.50

The 6, 9, 12, 18 and 24 inch have levels and center heads and will be sent complete unless otherwise ordered.
The 18, and 24 inch have same stock as 12 inch.

STARRETT'S SPECIAL STANDARD SQUARES, No. 8.

This square is similar to No. 11, but is larger and heavier. It is designed for the use of manufacturers who desire to keep a reliable standard. No center head is made for this tool.

18	in blade,	1 1/8	in. wide by	1/16	in. thick,	8¼	in. stock		$6.00
24	" "	1 1/8	" " "	1/16	" "	8¼	" "		7.00

IMPROVED BEVEL PROTRACTORS, No. 12.

This is the best bevel protractor for the price yet invented. An adjustable rule, held firmly at any point by a thumb nut, passes through a revolving turret which is nicely graduated in degrees from 0 to 90, both right and left, and can be accurately adjusted to show any angle. A valuable auxiliary is now made in the shape of a small level to be attached in place of the rule removed; forming an adjustable level to show any degree, thus greatly increasing the usefulness of the instrument. This level will now be sent with every Protractor without extra charge.

9 inch.....$3.00 12 inch.....3.25 18 inch.....4.00 24 inch.....4.50
Protractor Head only.....$2.00

STARRETT'S COMBINATION SET, No. 9.

This cut shows Combination Square No. 11, with center head and 7 in. Bevel Protractor head No. 12, all on the No. 11 Square scale. Each head may be instantly removed, or replaced and used interchangeably with the scale, thus forming the most useful combination set of tools ever devised for mechanics' use.

9	in.,	set	complete		$4.50
12	"	"	"		5.50
18	"	"	"		5.75
24	"	"	"		6.25

DOUBLE STEEL SQUARES, No. 14.

This cut represents a double, solid steel square with patent 2½ inch sliding scale and is especially designed for fine tool makers. The rule being narrow and instantly adjusted to any length, however short, allows it to be used where it would be impossible to use any square with a fixed blade. Fitted to go with this stock is made not only a bevel blade, shown with 4 inch double square but a very narrow scribing one, about ⅜ inch wide, highly prized by die makers for squaring small holes, both of which blades will be sent with the square unless otherwise ordered.

Square.....$2.00 With either bevel or narrow blade .$2 30 Complete $2.60

For prices of extra and separate parts of these Squares, etc., see next page.

Advertised only in Medical and Pharmaceutical Prints.

DR. J. FEHR'S
Compound Talcum Baby Powder

THE

"HYGIENIC DERMAL POWDER"

For Infants and Adults.

Originally investigated and its therapeutic properties discovered in the year 1868, by DR. FEHR, and introduced to the Medical and the Pharmaceutical Professions in the year 1873.

PROPERTIES—Antiseptic, Antizymotic and Disinfectant.

USEFUL AS A

GENERAL SPRINKLING POWDER,

With positive Hygienic, Prophylactic, and Therapeutic properties.

GOOD IN ALL AFFECTIONS OF THE SKIN.

Sold by the Drug Trade Generally.

Per box, plain.....$ .25 Perfumed .....$ .35
Per dozen, plain..... 1 75 Perfumed, per dozen..... 3 50

THE MANUFACTURER:

JULIUS FEHR, M. D.,

ANCIENT PHARMACIST, - - - HOBOKEN N. J

A SUCCEDANEUM FOR MORPHIA

Antikamnia

OPPOSED TO PAIN

A CERTAINTY IN MEDICINE.

DOES NOT DEPRESS THE HEART.

NO DRUG HABIT INDUCED.

NO TOXIC EFFECT.

OUR PREPARATIONS

Antikamnia Powdered.
Antikamnia Tablets.
Antikamnia and Codeine Tablets.
Antikamnia and Quinine Tablets.
Antikamnia and Salol Tablets
Antikamnia, Quin. and Salol Tablets.

BRITISH AND COLONIAL DEPOT: 46, Holborn Viaduct, London, E.C., Eng.

Send Your Professional Card For Brochure and Samples to **THE ANTIKAMNIA CHEMICAL CO., St. Louis Mo., U. S. A.**

Please mention THE ALKALOIDAL CLINIC when writing.

Silica
S & H

Cystitis, Urethritis, Catarrh of the Bladder, Gonorrhea and allied diseases.

Calolactose

A Succedaneum for Calomel.

Analgesine
S & H
(FORMULA OF DR. G. L. KERR)

Analgesic, Antipyretic, in powder or tablet form.

Quinimel
S & H

for covering the bitter taste of Quinine, Cinchonidine, etc.

WE MANUFACTURE A COMPLETE LINE OF

Elegant Pharmaceutical Preparations

Assayed Fluid, Solid and Powdered Extracts, Elixirs, Syrups, Wines, Concentrations and Alkaloids, Compressed Tablets and Lozenges, Hypodermic Tablets; also a large number of special and miscellaneous pharmaceuticals.

SEND FOR OUR PRICE LIST

and ask for samples of any of our preparations.

THE SEARLE & HERETH CO., Pharmaceutical Chemists, CHICAGO

HERMAPHRODITE CALIPERS AND DIVIDERS.

Made of best tool steel, with hardened points one leg having an adjustable point that when set is as rigid as though solid, the other point having a spur projecting from the bottom; so that the tool can be used as either a caliper or divider the spur being in such a position that it never interferes with its use as a caliper

	Firm Joint.	Screw Adjustment.
4 inch	$0.75	$1.00
6 "	1.00	1.25
8 "	1.25	1.75
10 "	1.50	2.00

IMPROVED COMBINATION DIVIDER AND CALIPER.

In presenting this tool to the trade, we have endeavored to supply a light durable and substantial tool that can be readily and quickly changed from a divider to a caliper, and possessing all the essential qualities of both. It can be used as a Divider, a Hermaphrodite, Key-hole, Inside and Outside Caliper

4 inch	$2.00	8 inch	$2.50
6 "	2.25	10 "	2.75

PENCIL HOLDERS.

For Marking Circles. To be attached to Dividers or Compasses.

Style A

Style B

Style A is one of the most complete things ...se; easily adjusted and not at all liable to get out of order.

Per dozen ..... $3.50 | Each 25c

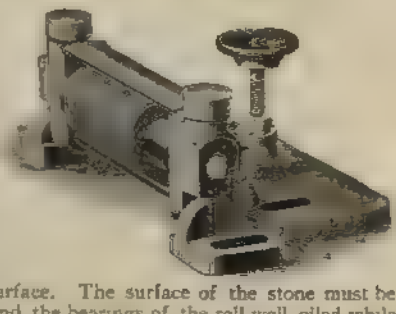
Style B, each 15c

FOOT-POWER FAMILY GRINDSTONES.

The stone is of fine quality and runs true. It is eight inches in diameter one and a half inch thick. The emery wheel is the same size as the stone. When not in use it is taken off and laid aside. A sponge is fastened to the side of a trough to keep the stone from throwing water when running at a high speed. The machine is run with a clutch, so that there can be no dead centers. By a treadle it starts off in the right direction, and runs at a very slight or very great rate of speed as desired. The legs are made to fold up for shipping so as to occupy a small space. Weight, 26 pounds

Each, including box $3.50

TURNER'S GRINDSTONE TRUING DEVICE.



The bottom piece or stand of the machine is to be firmly attached to the frame of the grindstone so as to bring the cutting roll in front of that face of the stone moving upward. To true the stone, turn the hand screw moderately until the roll is forced down upon the surface of the stone; do not turn screw down too hard, for the rolls do not cut as well as when only lightly bearing upon the surface. The surface of the stone must be kept wet during the cutting, and the bearings of the roll well oiled while in use. The dresser should be kept in position on the back of the stone so as to be always ready for use.

Inches	4	6	8	10	12
Each	$7.50	10.00	12.00	14.00	16.00

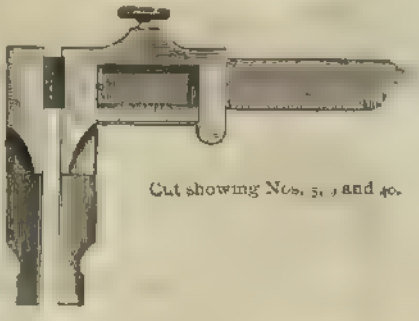
THE "COLUMBIA" CALIPERS.

Cut showing Nos. 3 and 4.

Long Jaws, giving large capacity, Increased Thickness of the Jaws at the Measuring Surface, convenient for measuring Glass Tubing, etc.

The lower left hand projection on the Sliding Jaw in order to handle Caliper with one hand.

The shape of Jaws, being so constructed as to have maximum of strength with the minimum of metal, and thus giving the instruments a neat and not clumsy appearance



Cut showing Nos. 5, 9 and 40.

NO. 3.

Graduated in 64ths and 100ths of an inch for inside and outside measurement.

PRICES.

4-inch, with jaws 1¼ inches long and ⅜ thick								$4.50	Without Adjusting Screw			$3.00
6-inch, " " 1¾ " " " ⅜ "								5.00	" " "			3.50
8-inch, " " 2⅛ " " " ½ "								5.50	" " "			4.00
10-inch, " " 2¾ " " " ¼ "								6.50	" " "			5.00
12-inch " " 3½ " " " ⅜ "								7.50	" " "			6.00

"COLUMBIA" VERNIER CALIPER, NO. 45.

Reads 100ths of a millimeter, 100ths of an inch, 1-32, 1-64, 1-128 inch

Length.	Length of Jaw.	Thickness.	Price.
4 inches.	1¼ inches.	5-32	$7.00
6 "	1¾ "	3-16	8.00

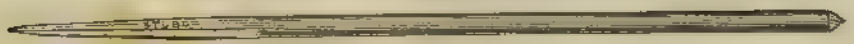
NO. 5.

Graduated in 10ths, with Vernier to read 32nds, 64ths and 128ths, and 32nds of an inch for depth measurements.

| | | | | | | | | | | | |

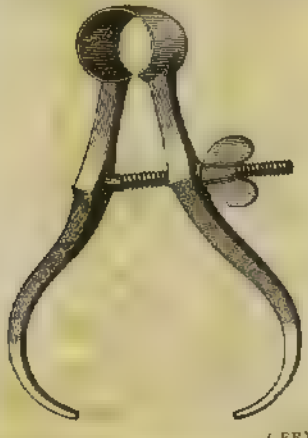
STUBS AND GERMAN TOOLS.

CURRIERS' STEELS.



Nos	2 to 12, by Stubs' Drill Rod Gauge	per doz.	$2.25
"	13 to 19, " "	"	1.75
"	20 to 29, " "	"	1.10
"	30 to 44, " "	"	.92
"	45 and smaller, " "	"	.83

No. 29. SPRING CALIPERS.



		GERMAN	STUBS.
1½ to 5	in...per doz.	$5.90	$18.00
" 5½	" .. "	5.90	19.50
" 6	" .. "	5.90	21.00
" 7	" .. "	7.10	24.00
" 8	" .. "	8.75	28.00

No. 59. SPRING DIVIDERS.

		GERMAN.	STUBS.
1½ to 5	in...per doz.	$5.00	$15.00
" 5½	" .. "	5.00	16.50
" 6	" .. "	5.00	18.00
" 7	" .. "	6.25	21.00
" 8	" .. "	8.00	24.00

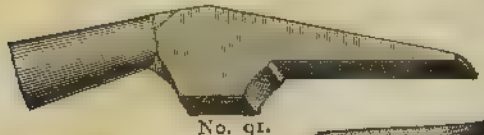
No. 61A. SPRING DIVIDERS.

IVORY KNOB, BRIGHT.

Per doz.....$18.00

German Inside Calipers, all sizes to 6 in. Per doz. $6.70

STUBS' HAMMERS.



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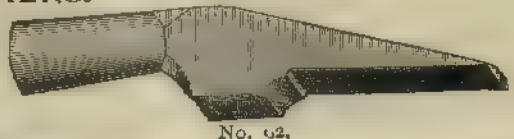

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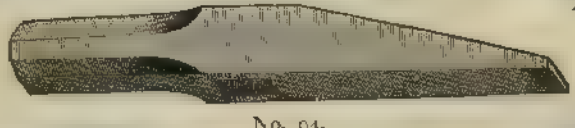

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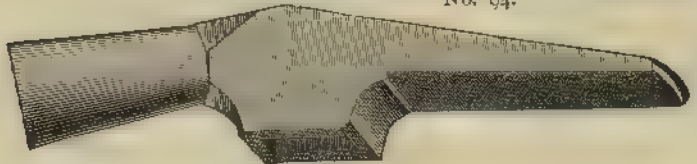
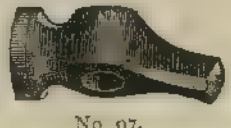


No. 95.



No 97.

WATCH HAMMERS.

		BRIGHT.
No. 91,	Flat Face..... per doz.	$4.00
" 92,	Round Face..... "	4.00

GENEVA HAMMERS.

		BRIGHT.
No. 94.....	.....per doz.	$4.00
" 94A.....	"	5.00

No. 95. CLOCK HAMMERS.

		BLACK.
Flat Face.....	.....per doz.	$4.50
A.....	"	5.00
B.....	"	6.00
C.....	"	7.00

No. 97. CHASERS' HAMMERS.

1 oz.....	.....per doz.	$6.00
1½ "	"	6.50
2 "	"	7.00
2½ "	"	7.50
3 "	"	8.00
3½ oz	.....per doz	$8.75
4 "	"	9.50
5 "	"	11.00
6 "	"	14.00

INTERNATIONAL SUPPLY DEPT. PUBLISHING CO.
Chicago Ill. Philadelphia Pa.

Only $5.90 THE KING OF CLOCKS Only $5.90

Dealers Will Charge from $10.00 to $20.00 for the Same.

How can we do this? **BECAUSE IT IS OUR LEADER.** We have made enormous contracts and on a Spot Cash Basis. We are satisfied with a small margin of profit on actual cost of manufacture.

OUR AIM IS TO SAVE YOU MONEY WHEREVER WE CAN.

It costs as much to sell a clock as it does to make it, and when you buy at retail you are **COMPELLED TO PAY THE MIDDLEMAN'S PROFIT.** We save you all this, and also when you take into consideration **THE FACT THAT THEY ARE MADE IN QUANTITIES OF 1000 AND UPWARD** at a time, you can see how we can afford to sell at so low a price.

This is an excellent timekeeper and is to be found only in the very finest of retail stores in the larger cities.

Send us $1.00 as a guarantee of good faith and we will send the clock by express C. O. D., subject to examination

If Not Satisfactory { DON'T PAY ONE CENT. THE AGENT WILL RETURN IT AT OUR EXPENSE. YOU WON'T LOSE A PENNY.

THE BEST WAY

is to send Cash in Full with Order, and you will save the discount, also express charges for the return of money.

No. 540.

Size: Length, 17 inches. Height, 15¼ inches. Dial, 5½ inches.

REMEMBER

we allow 3 per cent for Cash in Full with Order.

We guarantee perfect satisfaction.

The name alone is a sufficient guarantee of its quality. It is made by the famous Waterbury Clock Company, is warranted an accurate timekeeper, and will last a lifetime.

We Sell More of This Clock Than Any Other Three.

This clock is made in such a perfect imitation of **brown marble** that it is almost impossible to tell it from the genuine, in fact, you **cannot** tell the difference at a very short distance. The case is solid wood, with the new process **indestructible finish** and is guaranteed to hold its color and polish. In case it gets soiled or dirty, it can be wiped off with a damp rag or cloth without any fear, and with proper care **should last a lifetime.** It has the **American gilt dial,** exactly as shown in the cut, which gives it the appearance of a clock that would cost from $25.00 to $50.00 at retail. Also has elegant gilt ornaments, bases and caps, and the beautifully ornamented pillars on each side of the dial add most wonderfully to its beauty. **The movement** is an eight-day movement, with gong, and strikes every half hour. Three per cent off for cash in full with your order. This is certainly a rare offer and an **extra bargain** at our price, $5.90. If you are in need of a clock this is an opportunity to secure a timekeeper which will make you justly proud.

Order One! You Can Sell a Dozen and Double Your Money.

SEE OUR LINE OF VEHICLES AND HARNESS. SATISFACTION GUARANTEED IN EVERYTHING.

FULTON VERTICAL TUBULAR BOILERS.

Made in 2 Sizes, 1-4 and 1-2 Horse Power.

The cut represents the ¼ Horse Power Boiler, 10 inch Diameter x 16 inches high with a Water Jacket, and 20-¾ inch seamless, drawn brass Tubes, 10½ inches long.

The Shell of the ¼ Horse Power is of ⅛ inch Wrought Iron, lap welded, the upper and lower parts are of the best Gray Iron; the casing outside and the heads are of Russia Iron.

Each Boiler is tested to 100 pounds cold water pressure, and is guaranteed to carry 30 pounds steam pressure.

The Steam Gauge used on these Boilers is warranted the very best.

The Safety Valve is made of the best steam metal and will not stick or rust in use. There is also a Water Gauge and three Gauge Cocks, all of steam metal and Steam Water Pipes, with Valves.

These Boilers can be fired with hard coal, charcoal, gas or gasoline.

PRICES COMPLETE.

¼ Horse Power, with grate	25.00
½ Horse Power. 40 Brass Tubes. Shell 12 inches in diameter, ¼ inch thick. Height to top of tubes, 26 inches. Weight, 170 lbs. Size of pipe connections, 1 inch. Price, with grate	40.00

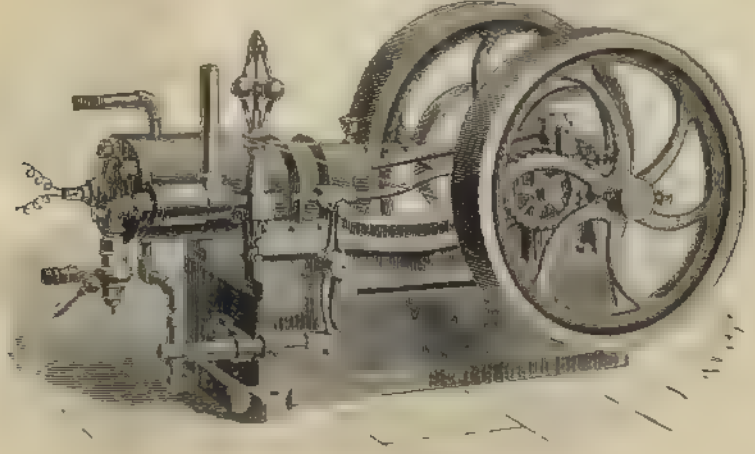
This size is intended for chimney connection, and is not designed with stack pipe.

Each size water gauge is now made with shut-off valve and pet cock, and the safety valve is of an improved pattern.

Gas Burners for ¼ Horse Boiler, each	3.00
Gasoline Burners for ¼ Horse Power Boiler, including tank	5.00
Gasoline Burners for ½ Horse Power Boiler, not including tank	7.00
Injector for ½ Horse Power	20.00

THE WEED GAS ENGINE.

May be run with gasoline by using a carburetor.



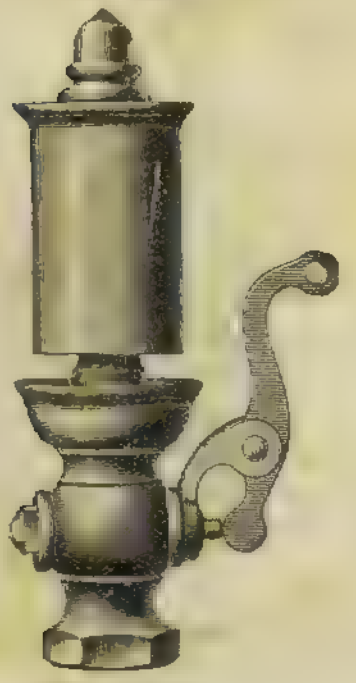
Complete set of Rough Castings, with Blue Prints, all parts, screws, etc.	$15.00
Engine complete	95.00

Weight, 70 lbs. Floor space, 15 x 13 inches.

Price of Carburetor, complete, extra	10.00
Induction Coil, extra	4.00
Two Cells of Dry Battery, each, extra	.85
Blue Print Working Drawings, separate	2.50

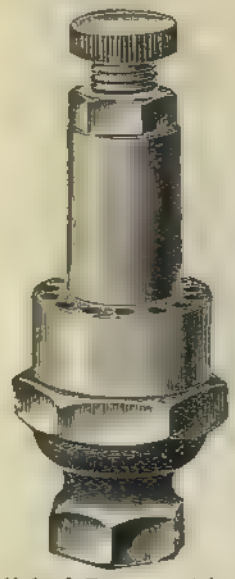
ATTACHMENTS FOR FULTON ENGINES AND BOILERS.

SPRING VALVE WHISTLES.



Polished Brass, ⅜-in pipe connections. Price, $2.50.

SPRING SAFETY VALVES.



Polished Brass, ⅛-in pipe connections, from 30 to 75 lbs. Price, $1.50.

SMALL BRASS OIL CUPS.

Small Brass Oil Cups, same sizes as cut.

	Each.
No. 1 Thread, ⅛-40	15c.
No. 2 Thread, No. 8	32.20c
No. 3 Thread, No. 8-32	25c.

SMALL BRASS LUBRICATOR.

Polished Brass, ⅛-in. pipe connection..$1.75
Postage, 8 cents

GOVERNORS

¼-in. pipe connection, suitable for half horse engine, improved throttling type

Price, each..... ...$10.00
Castings, per set..... .... 1.00

GAUGE COCKS.

⅛-in. pipe, wood handle, brass, each.. $0.35
Small, No. 10-32 thread, brass, each... .30

PET COCKS.

Small, No. 10-32 thread, brass, each... $0.25

GLOBE VALVES.

¼-in	$0 25
⅜-in	30
½-in	40

PUMPS.

Furnished complete with eccentric and rod to go directly on engine or other shaft.

Suitable for ¼ horse power boiler. . . .$5.00
" " ½ " " " . . . 8.00

SMALL GLASS WATER GAUGES.

Two Sizes.

$\frac{5}{16}$ inch glass, ⅛ inch connection..... $1.75

Size Larger

⅜ inch glass, ¼ inch connection..... 2.00

EXTRA GLASSES.

$\frac{5}{16}$ inch diameter, each. $0.08
⅜ " " " 10

STEAM GAUGES.

Solid brass, guaranteed to be the best.

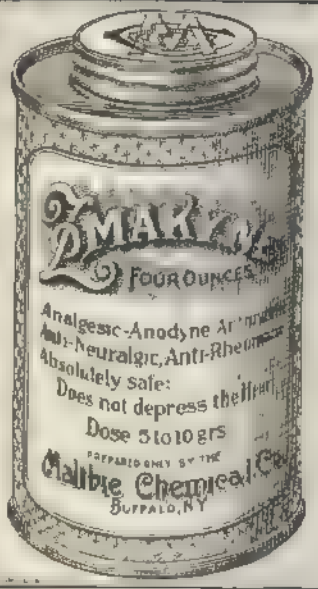
2½ inch face.....	$3.00
3 " "	3 50
4 " "	4.50

SAFETY VALVES.

With graduated lever and weight. Improved pattern, solid brass body, and provision to make pipe connection to carry away the waste steam.

Sizes, ⅛, ¼, ⅜-in. pipe. Prices..... .....$1 50, 1.75, 2.00.

FOUR OUNCES $1.00



ZOMAKYNE AT 25c. AN OUNCE

Is superior to any analgesic and antipyretic at $1.00 an ounce. It relieves pain and reduces temperature promptly, without depressing the heart. It is a specific for influenza, headache, dysmenorrhoea and all cases where a pain reliever is required.

HOW CAN IT BE SOLD SO CHEAP?

Simply by putting the cost into the remedy itself, instead of expensive advertising schemes, traveling salesmen and enormous quantities of samples, all of which necessarily increase the price.

A TRIAL FREE IF UNSATISFACTORY.

Send $1.00 for a 4-ounce box (powder or tablets), use it all up, then if not well pleased return the empty box and the money will be refunded. Literature free.

FOUR OUNCES $1

THE MALTBIE CHEMICAL CO·BUFFALO,N.Y.

Please mention THE ALKALOIDAL CLINIC when writing.

INFLUENCE OF FOOD AND INANITION ON THE EFFECTS OF CERTAIN MICROBIAN TOXINS.

Teissier and Guinard have been studying the effects of the administration of the diphtheritic toxin and pneumo-bacillin to well-fed dogs and to others in a fasting condition. They found that the fasting dogs resisted the toxins to a much greater degree than the others. When they succumbed to the effects of the toxins, the lesions were much less severe than in the others. The *Journ. Med.* concludes that these experiments may throw a new light on the question of diet in infective diseases.—*Jour. Am. Med. Assoc.*

PLEASANT CASTOR OIL.

Castor oil may be stirred into an emulsion with hot milk, and a little orange flower syrups added. Or, the oil may be shaken up with porter, in a bottle.—*Am. Med. Sur. Bull.*

A still better way is not to give the oil, but use a few granules of euonymin or juglandin.—ED.

Tannoform

Is of eminent service in excessive perspiration, especially when attended by intense irritation. It restrains profuse secretion and overcomes offensive odor. It adheres closely to the skin, or to irritated surfaces, and is perfectly innocuous.

Tannalbin

Manufactured by Knoll & Co., Ludwigshafen a. R.

is a tannate of tannin which has been rendered inert by heating at high temperature. It is an active remedy in intestinal antisepsis and overcomes many of the disadvantages of the salts of silver, lead and bismuth of tannin. Tannalbin is inactive in the mouth or stomach, but is uniformly effective in the intestines.

Triphenin Merck

Superior to Phenacetin

Has decided advantages over it. Triphenin is a coal-tar derivative and is highly successful in all conditions demanding a prompt and safe anti pyretic or analgesic

Merck & Co. University Place, New York.

Please mention THE ALKALOIDAL CLINIC when writing.

Upon receipt of 14 cents to cover postage, ¼ lb. sample will be mailed to any regular registered Physician in the United States, of

KEITH'S CON. TINC. AVENA SATIVA

FROM COMMON OATS

A POWERFUL NERVE STIMULANT, TONIC, Etc.

IS EMPLOYED IN THE TREATMENT OF

ALL DISEASES OF THE NERVOUS SYSTEM.

DOSE.—From ten to thirty drops or more, as often as may be indicated to meet the urgency of the case. Administer in hot water when quick action is desired

PRICE: 2 oz., 45c. 4 oz., 75c. 8 oz., $1.35. 16 oz., $2.50.

MESSRS. B. KEITH & Co. LONDON, TENN., Jan. 16, 1896.

Gentlemen—I have received the bottle of *Con. Tinc. Avena Sativa* which you sent, and have used it with gratifying results. The patient was in the habit of taking 10 grains of opium daily, and since using the *Avena Sativa* has not taken any in ten (10) days. I am giving him from 60 to 70 min ms, four or five times in the 24 hours. I will report progress of the case. Enclosed find —, for which please send me *Con. Tinc. Avena Sativa*, and oblige,

Respectfully, J. J. HARRISON, M.D

Send for printed matter on Con. Tinc. Avena Sativa in the Morphine or Opium Habit, and certificates from different members of the medical profession citing cases under their charge treated by it, also **Revised and Enlarged Manual**, to

B. KEITH & CO., Organic Chemists,

ESTABLISHED 1852

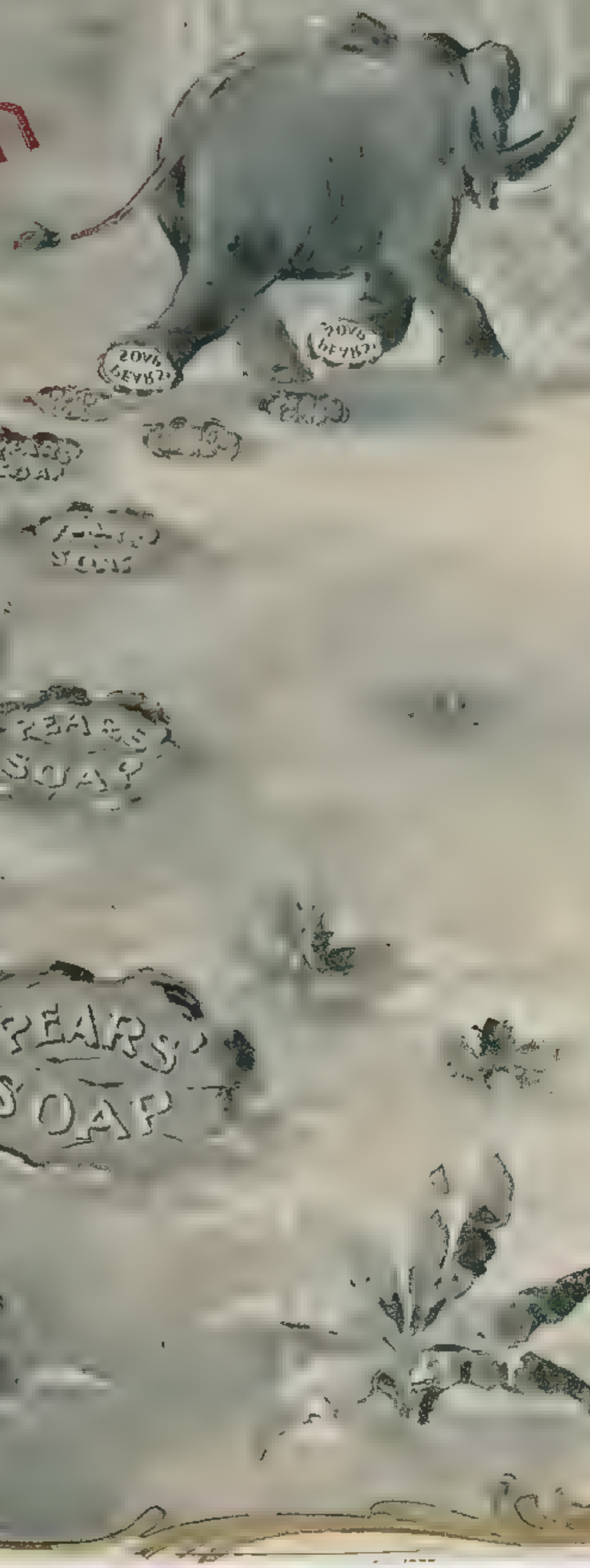
75 William Street - NEW YORK

Please mention THE ALKALOIDAL CLINIC when writing.

Send Your Professional Card For Brochure and Samples to THE ANTIKAMNIA CHEMICAL CO., St. Louis Mo., U. S. A.

Please mention THE ALKALOIDAL CLINIC when writing.

Leaves
a good
Impression



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AMATEUR SPORT

A [illegible] PIGEON MAST" By Caspar Whitney. Copiously Illustrated.- 8vo. Cloth, Ornamental, $3 50.- Harper & Brothers

AMATEUR SPORT

THOMAS BRACKETT REED

Single Barrel Repeating Shot Guns.

WINCHESTER, MODEL 1897.

Take Down, Brush Gun.

Stock 13⅞ in. Long, 2 5/16 in. Drop at Heel and 1⅝ in. Drop at Comb.

Side Ejecting, Pistol Grip, Walnut Stock, Barrel Cylinder Bored, Chambered for 2¾ in. Shells, Holds 6 Shots.

Each

No. 68—12 Gauge, 26 in. Rolled Steel Barrel, Weight About 7¼ Lbs.....$27.00

The "Take Down" "Brush" Gun is made according to the same specifications as the regular "Brush" Gun, except it has a full length magazine, which increases the weight slightly.

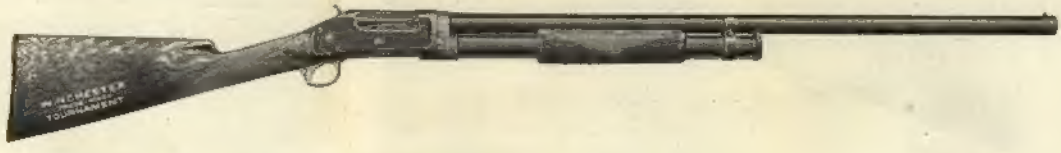
Take Down, Trap Gun.

Side Ejecting, Straight Checkered Grip, Selected Walnut Stock, Matted Barrel, Rubber Butt Plate, Barrel Choke Bored, Chambered for 2¾ in. Shells, Hold 6 Shots.

Each

No. 162—12 Gauge, 30 in. Rolled Steel Barrel, Weight About 7¾ Lbs.....$52.00

The Standard Style Stock of No. 162 Trap Gun is 13¾ in. Long, has a Drop of 2⅜ in. at Heel and 1½ in. at Comb. Any Length or Drop furnished to order from factory without extra charge.



Take Down, Tournament Gun.

Stock 14 in. Long, 1 13/16 in. Drop at Heel, 1¾ in. Drop at Comb.

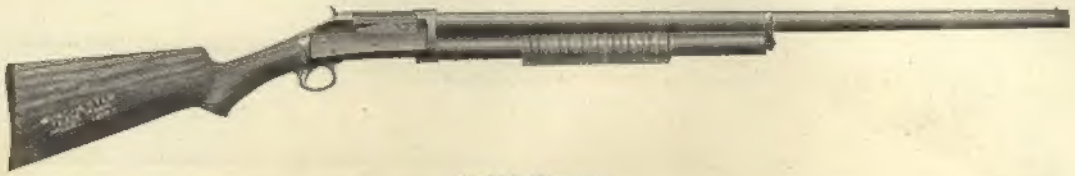
Side Ejecting, Straight Checkered Grip, Selected Walnut Stock, Matted Barrel, Rubber Butt Plate, Barrel Choke Bored, Chambered for 2¾ in. Shells, Hold 6 Shots.

Each

No. 166—12 Gauge, 30 in. Rolled Steel Barrel, Weight About 7¾ Lbs.....$42.00

Single Barrel Repeating Shot Guns.

WINCHESTER, MODEL 1897.



Solid Frame.

Stock 13⅞ in. Long, 2⅜ in. Drop at Heel and 1¾ in. Drop at Comb.

Side Ejecting, Plain Pistol Grip, Walnut Stock, Barrel Choke Bored, Rubber Butt Plate, Chambered for 2¾ in. Shells, Holds 6 Shots.

	Each
No. 62—12 Gauge, 30 in. Rolled Steel Barrel, Weight About 7½ Lbs.	$25.00
No. 63—12 Gauge, 32 in. Rolled Steel Barrel, Weight About 8 Lbs.	25.00

The Above Solid Frame Shot Gun can be furnished in 12 Gauge Only.

Gun Taken Apart.

Take Down.

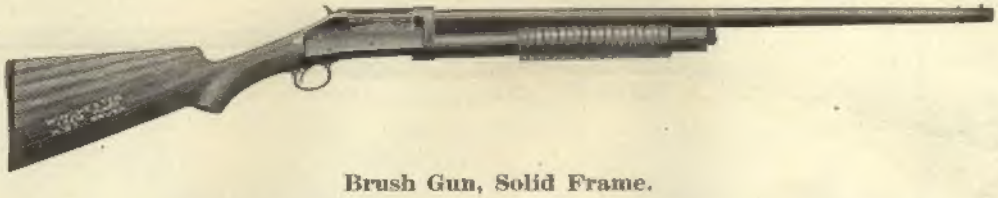
Stock 13⅞ in. Long, 2⅜ in. Drop at Heel and 1¾ in. Drop at Comb.

Side Ejecting, Plain Pistol Grip, Walnut Stock, Barrel Choke Bored, Chambered for 2¾ in. Shells, Holds 6 Shots.

	Each
No. 65—12 Gauge, 28 in. Rolled Steel Barrel, **Full or Modified Choke**, Weight About 7½ Lbs.	$27.00
No. 65—12 Gauge, 30 in. Rolled Steel Barrel, **Full or Modified Choke**, Weight About 7¾ Lbs.	27.00
No. 66—12 Gauge, 32 in. Rolled Steel Barrel, **Full or Modified Choke**, Weight About 8 Lbs.	27.00
No. 67—16 Gauge, 28 in. Rolled Steel Barrel, **Full Choke**, Weight About 7½ Lbs.	27.00

Nos. 65 and 66 will always be sent with Full Choke unless otherwise ordered.

Can Furnish Model 1897 with Model 1893 Stock, 13 in. Long x 2¾ in. at Heel and 1¾ in. at Comb.



Brush Gun, Solid Frame.

Stock 13 7/10 in. Long, 2 5/16 in. Drop at Heel and 1⅝ in. Drop at Comb.

Side Ejecting, Plain Pistol Grip, Walnut Stock, Barrel Cylinder Bored, Chambered for 2¾ in. Shells, Holds 5 Shots.

	Each
No. 160—12 Gauge, 26 in. Rolled Steel Barrel, Weight About 7 Lbs.	$25.00

The Winchester "Brush" Gun, as its name implies, is designed expressly for bird shooting in field and cover. It is particularly desirable for this kind of shooting, owing to its light weight and strong shooting qualities.

The magazine is shorter than that of the regular Model 1897 Shotgun, holding four instead of five cartridges.

Single Barrel Repeating Shot Guns.

WINCHESTER, MODEL 1897.

Take Down, Pigeon Gun.

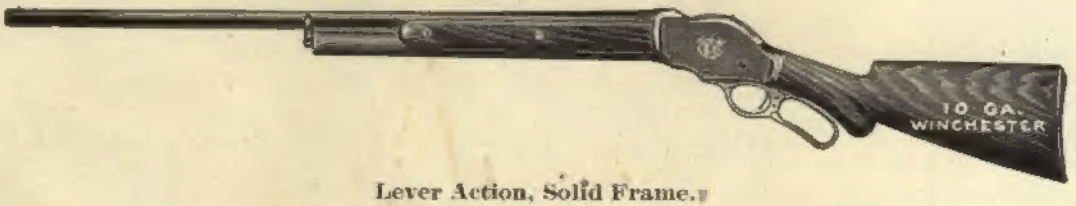
Stock 13¾ in. Long, 2 1/16 in. Drop at Heel, 1 13/16 in. at Comb.

Side Ejecting, Straight Checkered Grip, Frame Elaborately Engraved, Selected Walnut Stock, Rubber Butt Plate, Barrel Choke Bored, Chambered for 2¾ in. Shells, Holds 6 Shots.

Each

No. 165—12 Gauge, 28 in. Rolled Steel Matted Barrel, Weight About 7¾ Lbs. $100.00

WINCHESTER, MODEL 1901.



Lever Action, Solid Frame.

Stock 13 in. Long, 2 1/16 in. at Heel, 1⅞ in. at Comb.

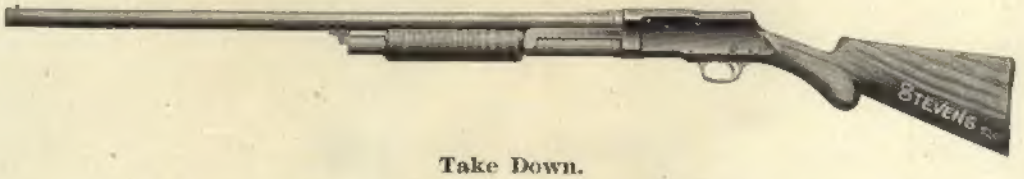
Walnut Stock, Plain Pistol Grip, Checkered Steel Butt Plate, Barrel Choke Bored, Chambered for 2⅞ in. Shells, Holds 6 Shots.

Each

No. 100—10 Gauge Only, 32 in. Rolled Steel Barrel, Weight About 8¾ Lbs. $30.00

NOTE—The No. 100 Lever Action Shot Gun Cannot be Furnished in 12 or 16 Gauge.

STEVENS', (BROWNING'S PATENT).



Take Down.

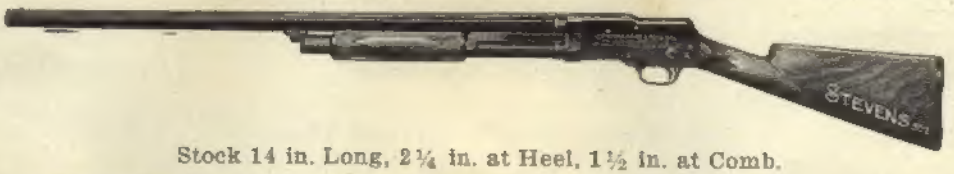
Stock 13¾ in. Long, 2⅜ in. at Heel, 1⅝ in. at Comb.

Walnut Stock, Plain Pistol Grip, Rubber Butt Plate, Barrel Full Choke Bored, Chambered for 2¾ in. Shells, Holds 6 Shots.

Each

No. 520-S—12 Gauge, 30 and 32 in. Stevens' Compressed Forged Steel Barrel, Weight About 7¾ Lbs. $27.00

STEVENS', TRAP SHOOTER GRADE, (BROWNING'S PATENT).



Stock 14 in. Long, 2¼ in. at Heel, 1½ in. at Comb.

Checkered Walnut Stock, Straight Grip, Rubber Butt Plate, Hollow Matted Rib, Drop Forged, Black Oxide Finish Receiver, Visible Locking Block, Safety Firing Pin, Barrel Full Choke Bored, Chambered for 2¾ in. Shells, Holds 6 Shots.

Each

No. 522-S—12 Gauge, 30 in. Stevens' Compressed Forged High Pressure Steel Barrel, Bored for Nitro Powder, Weight About 7¾ Lbs. $40.00

Repeating Rifles.

STEVENS', HIGH POWER.

Solid Steel Receiver, Walnut Stock and Fore-End, Checkered Steel Butt Plate.

		Each
No. 425—25	Caliber Rimless Cartridge, 22 in. Nickel Steel Barrel, 6 Shots, Wt. About 7 Lbs....	$20.00
No. 430—30-30	Caliber Rimless Cartridge, 22 in. Nickel Steel Barrel, 6 Shots, Wt. About 7 Lbs....	20.00
No. 432—32	Caliber Rimless Cartridge, 22 in. Nickel Steel Barrel, 6 Shots, Wt. About 7 Lbs....	20.00
No. 435—35	Caliber Rimless Cartridge, 22 in. Nickel Steel Barrel, 6 Shots, Wt. About 7 Lbs....	20.00

The Solid Top and Rear of the Receiver protect the eyes of operator from Powder Gas in case of a broken primer or a defective shell.

The Solid Top of the Receiver protects the mechanism from rain, snow, sand, leaves, etc.

When the action is closed, the breech-block completely fills the space between the end of the barrel and the solid, rear wall of the steel receiver, and forms the strongest lock possible.

The breech-block is always entirely enclosed within the receiver.

The empty shell is ejected from the side and away from the face of the operator.

The hammer is always in full sight and control of the shooter; therefore no safety device is needed. The half-cock position of the hammer makes the rifle absolutely safe.

Th hammer and trigger are made of tool steel and oil tempered.

The coil main spring will not break in cold weather and insures a smooth and noiseless action.

This rifle cannot be prematurely discharged.

The firing pin is in two parts and cannot strike the primer until the action is closed, bringing the two parts into alignment, making a complicated trigger lock unnecessary.

WINCHESTER, MODEL 1873.

Plain Trigger, Steel Barrel, Full Magazine.

		Each
No. 200—32	Caliber Center Fire Cartridge, 24 in. Round Barrel, 14 Shots, Wt. About 8½ Lbs...	$18.00
No. 201—32	Caliber Center Fire Cartridge, 24 in. Octagon Barrel, 14 Shots, Wt. About 8¾ Lbs...	19.50
No. 202—38	Caliber Center Fire Cartridge, 24 in. Round Barrel, 14 Shots, Wt. About 8½ Lbs...	18.00
No. 203—38	Caliber Center Fire Cartridge, 24 in. Octagon Barrel, 14 Shots, Wt. About 8¾ Lbs...	19.50
No. 204—44	Caliber Center Fire Cartridge, 24 in. Round Barrel, 14 Shots, Wt. About 8½ Lbs...	18.00
No. 205—44	Caliber Center Fire Cartridge, 24 in. Octagon Barrel, 14 Shots, Wt. About 8¾ Lbs...	19.50